Volume 40, Number 4 August 1997

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The Academy of Management

JOURNAL

Articles

International Diversification: Effects on Innovation and Firm Performance in Product-Diversified Firms
Michael A. Hitt, Robert E. Hoskisson, and Hicheon Kim

A Longitudinal Disaggregation of Operational Risk under Changing Regulations: Evidence from the Savings and Loan Industry
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Organizational Dress as a Symbol of Multilayered Social Identities
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"That's Not My Job": Developing Flexible Employee Work Orientations
Sharon K. Parker, Toby D. Wall, and Paul R. Jackson

Research Notes

Does National Culture or Ambient Temperature Explain Cross-National Differences in Role Stress? No Sweat!
Mark F. Peterson and Peter B. Smith

Effects of Preinterview Beliefs on Applicants' Reactions to Campus Interviews
Cynthia Kay Stevens

The Consequences of Informal Job Finding for Men and Women
Kevin T. Leicht and Jonathan Marx

Implicit Theories, Self-Schemas, and Leader-Member Exchange
Elaine M. Engle and Robert G. Lord

28

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P 7752

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Academy of Management JOURNAL

28

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Academy of Management JOURNAL

CONTENTS

Volume 40, Number 4, August 1997

ARTICLES

From the Editor 765

International Diversification: Effects on Innovation and Firm Performance in Product-Diversified Firms
Michael A. Hitt, Robert E. Hoskisson, and Hicheon Kim 767

A Longitudinal Disaggregation of Operational Risk under Changing Regulations: Evidence from the Savings and Loan Industry
Robert M. Wiseman and Anthony H. Catanach, Jr. 799

A Structural Contingency Approach to Bureaucracy and Democracy in U.S. National Unions
Paul Jarley, Jack Fiorito, and John Thomas Delaney 831

Organizational Dress as a Symbol of Multilayered Social Identities
Michael G. Pratt and Anat Rafaeli 862

"That's Not My Job": Developing Flexible Employee Work Orientations
Sharon K. Parker, Toby D. Wall, and Paul R. Jackson 899

RESEARCH NOTES

Does National Culture or Ambient Temperature Explain Cross-National Differences in Role Stress? No Sweat!
Mark F. Peterson and Peter B. Smith 930

Effects of Preinterview Beliefs on Applicants' Reactions to Campus Interviews
Cynthia Kay Stevens 947

The Consequences of Informal Job Finding for Men and Women
Kevin T. Leicht and Jonathan Marx 967

Implicit Theories, Self-Schemas, and Leader-Member Exchange
Elaine M. Engle and Robert G. Lord 988

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FROM THE EDITOR

By the time you receive this issue, Hong Kong will have been under Chinese sovereignty for about two months. I hope that all the fears about the future of Hong Kong will have been reasonably alleviated by the city's continuing progress and stability since July 1, 1997. I was fortunate to be here to witness and experience the transition personally. Over the two years before the transition, I had a feeling (yes, this is all that it could be since no one has a crystal ball) that things would be all right after the transition. That is why I decided to keep the *AMJ* office in Hong Kong and to continue editing the *Journal* from offshore. My first priority is not to jeopardize the status and production of the *Journal.* I am glad to report that life has been "as usual," and there is every reason to be confident that it will continue to be so in the future.

This issue also marks an anniversary. On July 15, 1996, Rita Kosnik, Greg Northcraft, and I began our editorial duties. So it has been a full year since we started receiving new manuscripts submitted to the *Academy of Management Journal.* We have learned a lot in this year, and it has been a very rewarding one for us. We have received 431 new manuscripts and 79 revisions, a total of 510 in this period (revisions included some manuscripts originally submitted to previous editors). We also have been able to maintain the fast turnaround that has been the competitive advantage of *AMJ.* The average turnaround time has been 65 days for new manuscripts and 56 days for revisions. Below are the statistics on the disposition of the past year's manuscripts:

New Manuscripts (total = 431)			Revisions (total = 79)		
Status	**Number**	**Percentage**	**Status**	**Number**	**Percentage**
Conditional acceptance	1	0.2%	Acceptance	5	6.2%
Request revision	122	28.3	Conditional accept	16	20.2
Under review	67	15.5	Request further revision	19	24.1
Return without review	53	12.3	Under review	18	22.8
Reject with review	186	43.2	Reject with review	19	24.1
Withdrawn	2	0.5	Withdrawn or returned	2	2.5

We are also proud to let you know that we have developed an *AMJ* home page on the World Wide Web. The address is http://www.aom.pace.edu/amj/. This page contains such basics as *AMJ*'s mission statement, information for contributors, the "Style Guide for Authors," reviewer guidelines, the editorial board, and information on special research forums. The home page is still under development. Please take a look and give us suggestions on information that you would like to see included.

Finally, I am extremely pleased to announce that there are two new calls for papers for special research forums in this issue: **The Management of Organizations in the Natural Environment** and **Enterprise Strategies in Emerging Economies.** Both are important and interesting themes. Understanding how organizations interact with the natural environment is critical for society now and in the future, and, as I can personally vouch, emerging economies present many research questions that should be investigated. I hope you will take notice of these two calls for papers, which are on the last pages of this issue, and will contribute your best work on related topics.

Anne S. Tsui
Hong Kong

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INTERNATIONAL DIVERSIFICATION: EFFECTS ON INNOVATION AND FIRM PERFORMANCE IN PRODUCT-DIVERSIFIED FIRMS

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Theory suggests and results show that firm performance is initially positive but eventually levels off and becomes negative as international diversification increases. Product diversification moderates the relationship between international diversification and performance. International diversification is negatively related to performance in nondiversified firms, positively related in highly product-diversified firms, and curvilinearly related in moderately product-diversified firms. International diversification is also positively related to R&D intensity, but the interaction effects with product diversification are negative. The results of this study provide evidence of the importance of international diversification for competitive advantage but also suggest the complexities of implementing it to achieve these advantages in product-diversified firms.

Both international and product diversification play key roles in the strategic behavior of large firms (Hitt, Hoskisson, & Ireland, 1994). Building on the seminal work of Hymer (1960) and Vernon (1966), international management scholars have explored the competitive and performance implications of international diversification (Ghoshal, 1987; Leontiades, 1986; Prahalad & Doz, 1987). International diversification may be defined as expansion across the borders of global regions and countries into different geographic locations, or markets. Thus, a firm's level of international diversification is reflected by the number of different markets in which it operates and their importance to the firm (as measured, for instance, by the percentage of total sales represented by each market). International business scholars have argued that international diversification is important because it is based on exploiting foreign market opportunities and imperfections through internalization (Rugman, 1979, 1981). Internalization refers to bringing new foreign operations within the boundaries of a firm rather than using arm's-length market transactions. Although international markets and associated operations may yield new opportunities, they also present increased competitive challenges from international and local competitors.

Product diversification is expansion into product markets new to a firm. For several decades, product diversification has been a highly popular strategy among large and growing industrial firms in the United States, Europe, Asia, and other parts of the industrialized world (Berry, 1975; Chang & Choi, 1988; Dyas & Thanheiser, 1976; McDougall & Round, 1984; Suzuki, 1980). The evidence on the performance implications of product diversification is inconclusive (Hoskisson & Hitt, 1990).

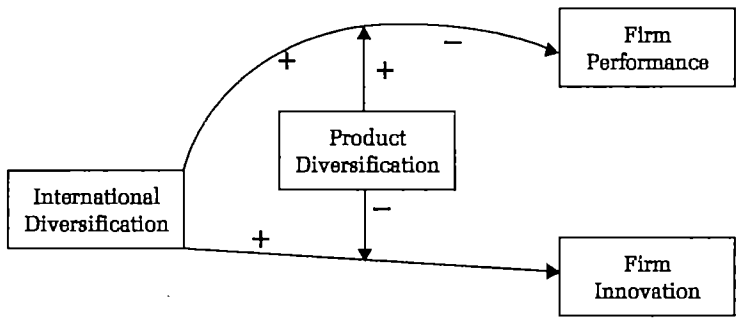
The complexity of managing product and geographically diverse firms, particularly those operating in international markets, and growing global competition have hastened the search for ways to gain and sustain competitive advantage. Research suggests that innovation (process and product) may be important for gaining competitive advantage in many international and global markets (Franko, 1989; Porter, 1990). Because customers now expect high quality and low cost in global markets (Prahalad, 1990), competition has shifted to new product development. As a result, the long-term performance of firms operating in international markets may be based, at least partially, on their ability to develop product and process innovations.

Past researchers have proposed a positive relationship between international diversification and performance, but the results of empirical tests have been decidedly mixed (cf. Geringer, Beamish, & daCosta, 1989; Rugman, 1979). The reason for these mixed results, we argue, is that the relationship is more complex than has been theoretically argued and empirically tested. For instance, economists have proposed and empirically supported the notion that innovation leads to international diversification (Caves, 1982; Kamien & Schwartz, 1982). However, there are strong arguments to suggest that international diversification leads to innovation. Furthermore, many internationally diversified firms are also product diversified. Given the substantial research on product diversification and its assumed effects on firm outcomes (Hoskisson & Hitt, 1990), we expected it to moderate the relationship between international diversification and performance and that between international diversification and innovation. Therefore, it is important to examine the complexity of these relationships both theoretically and empirically. Thus, we designed this research to examine the model shown in Figure 1. We drew on the extant theory from several disciplines (i.e., international business, international management, and strategic management) and specific theoretical domains (i.e., transactions costs, the resource-based view of the firm, and organizational learning) to build the conceptual framework.

OVERVIEW AND THEORETICAL BASES OF THE CONCEPTUAL FRAMEWORK

As the model in Figure 1 suggests, we propose a curvilinear relationship between international diversification and firm performance that begins positive but eventually becomes negative with increasing international diversification. Furthermore, we propose a positive relationship between international diversification and innovation. However, we expected product diver-

FIGURE 1
International Diversification, Product Diversification, and Firm Outcomes



sification to moderate both of these relationships, positively in the case of the international diversification and performance relationship and negatively in the case of the international diversification and innovation relationship.

Most prior international management research has relied on foreign direct investment and internalization theories to explain international diversification. However, such research provides an incomplete explanation of this phenomenon of growing importance. We integrate three theoretical domains from strategic management and organization theory, the resource-based view of the firm, transaction costs, and organizational learning, to understand and explain the aforementioned relationships. International diversification seeks to use internal resources and capabilities to exploit market imperfections existing across global regions and countries (the resource-based view). However, firms experience increasing transaction costs with greater international diversification. For example, coordination between units in different geographic regions is necessary to exploit the potential economies of scope with internal resources. At some point, however, the coordination required (multiple transactions among many geographically diverse units) costs more than the benefits derived from sharing resources and exploiting market opportunities. These transaction costs, then, begin to produce diminishing returns to international diversification (creating an inverted U-shaped curvilinear relationship).

In his eclectic theory, Dunning (1988) explained foreign direct investment using various perspectives to move toward a theory of the multinational firm. The eclectic perspective examines how ownership, location, and internalization (OLI) explain the foreign direct investment of the multinational enterprise. The eclectic perspective, however, has been criticized for not developing the ownership construct beyond internalization and market imperfections theory (Itaki, 1991). Our integrative framework develops this aspect more prominently through the resource-based view of the firm. Resource-based theory provides a more independent and richer perspective

on actions taken by firms moving into international markets than does the ownership explanation from Dunning's eclectic theory.

Additionally, Kogut and Zander (1993) and Love (1995) suggested that knowledge development or organizational learning may be a more important rationale for foreign direct investment than market failure. We incorporated learning theory into our framework from a management rather than an economic perspective. For example, we emphasize information processing and control arguments based on organizational learning theory.

We draw on both organizational learning theory and the resource-based view to explore the relationship between international diversification and innovation. First, internationally diversified firms have incentives to invest the necessary resources to build and maintain the capabilities needed to develop innovation (earning greater returns on innovation, which is important for competitive advantage in global markets). Additionally, international diversification helps generate the resources necessary for highly R&D-intense organizations (Kobrin, 1991). Finally, internationally diverse firms have access to the resources necessary to build innovation capabilities (Kotabe, 1990). For example, they are exposed to new and diverse ideas from multiple market and cultural perspectives.

Product diversification plays moderating roles in the model. First, we suggest that it positively moderates the international diversification and performance relationship. We again argue for this moderation effect from the resource-based perspective. Experience with product diversification can build managerial capabilities that allow more effective management of international diversification. In other words, organizational learning theory suggests that experience with product diversification provides the ability to deal with some of the complex challenges posed by international diversification. However, we expected product diversification to negatively moderate the relationship between international diversification and innovation. This occurs because product diversification creates conditions that prevent firms from taking advantage of the resources produced by international diversification for innovation (the resource-based view). Essentially, the governance scope exceeds the managerial capabilities. This perspective focuses on information-processing and control problems (Hill & Hoskisson 1987). Because of this excess scope, corporate executives shift from an emphasis on strategic controls to an emphasis on financial controls. To apply strategic controls requires an effective understanding of each of a firm's businesses and diverse markets and requires a significant amount of coordination (transactions) between corporate and business-level managers. Thus, business-level managers shift their emphasis from strategic goals such as innovation to financial outcomes. Furthermore, the lack of understanding of the diverse businesses and information overload disallow taking advantage of learning opportunities presented by international diversification.

The integration of the three theoretical perspectives to explain and understand international diversification and its relationship to firm outcomes (innovation and performance) moves us toward a new theory of the multi-

national firm. These relationships are more fully explicated in the arguments that follow, and testable hypotheses are proposed.

CONCEPTUAL FRAMEWORK

International Diversification and Performance

International diversification offers several advantages to firms. For example, some have argued that international diversification offers prospective market opportunities (e.g., Buhner, 1987). Thus, it affords the opportunity for greater firm growth. However, the most prominent argument offered in the literature is that international diversification provides the opportunity to exploit the benefits of internalization (performing many activities internally; Rugman, 1981). Performing activities internally has several benefits; among them are economies of scale, scope, and learning (Kogut, 1985), exploiting the relationships among business segments and geographic areas (Porter, 1985), sharing distinctive firm capabilities or core competences across business units (Hamel, 1991; Porter, 1990), and exploiting differences in factor markets (Porter, 1990). These characteristics of international diversification derive primarily from the resource-based view of the firm (Fladmoe-Lindquist & Tallman, 1994). The characteristics are explored briefly below.

Multinational firms have the opportunity to integrate across country borders by standardizing products, rationalizing production, and coordinating critical resource functions such as R&D (Kobrin, 1991). Thus, international diversification provides greater opportunities to achieve optimal economic scale and to amortize investments in critical functions such as R&D and brand image over a broader base. Additionally, internationally diversified firms can gain competitive advantages by exploiting market imperfections (e.g., differences in national resources) and cross-border transactions and can also gain the increased flexibility and greater bargaining power that result from a multinational network and from larger economies of scale, scope, and learning (Kogut, 1984). Economies of scale gained through international diversification allow firms to increase their efficiency. Also, increased learning and innovation result from economies of scope gained through international diversification (Kochhar & Hitt, 1995).

Firms with strong core competences, often developed in their home country operations, can apply such competences in international markets (Bartlett & Ghoshal, 1989). The competitive advantages that produce greater profitability in domestic markets provide motivation to apply the same competences in international markets to further enhance a firm's profitability (Porter, 1990). The resource sharing among firms' multiple international operations in turn facilitates exploitation of common sets of core competences to produce synergy (Grant, Jammine, & Thomas, 1988).

As noted earlier, the arguments related to the benefits of internalization are largely based on the resource-based view of the firm (Barney, 1991). Clearly, the arguments proposing that internalizing activities and making

more effective use of internal capabilities (which might include economies of scope and the sharing of such resources as core competences) yield greater firm performance suggest that firms may largely differ on the basis of their internal resources and capabilities (cf. Tallman & Li, 1996).

Although the arguments for a positive relationship between international diversification and firm performance seem compelling, the results of empirical research are decidedly mixed (Ramaswamy, 1995; Tallman & Li, 1996). For example, Vernon (1971), Grant (1987), Daniels and Bracker (1989), Haar (1989), and Kim, Hwang, and Burgers (1993) all found a positive relationship between international diversification (with several different measures) and firm performance (often measured by profitability ratios). Alternatively, others have found no linear relationship between international diversification and performance (cf. Geringer et al., 1989; Kumar, 1984; Morck & Yeung, 1991). Geringer and colleagues (1989) did not find the positive linear relationship between international diversification and performance they argued for and hypothesized, but their post hoc tests with controls for continent of origin showed a nonlinear inverted U-shaped relationship between international diversification and performance. Geringer and colleagues suggested that there may be a critical threshold for international diversification that "would portend potentially significant ramifications for management of multinational enterprises" (1989: 117).

The results noted above suggest that, although there may be good reasons to believe that moderate levels of international diversification provide multiple benefits to an organization, there are also some significant costs associated with international diversification. International diversification is complex and difficult to manage (Roth, 1992; Roth, Schweiger, & Morrison, 1991). Escalating geographic dispersion can greatly enhance transaction costs and managerial information-processing demands (Hitt et al., 1994; Jones & Hill, 1988). For example, geographic dispersion increases coordination, distribution, and management costs. To derive the benefits of economies of scale and scope requires coordination across units in multiple geographic locations. Firms must develop the ability to manage the global distribution of goods. Differing government regulations and trade laws and currency value fluctuations across countries create significant barriers to this coordination, adding complexity as a firm increases its international diversification (Sundaram & Black, 1992). Trade barriers, logistical costs, cultural diversity, and country differences in such factors as access to raw materials and employee skills require considerable coordination before the advantages of differences in factor markets and economies of scope can be enjoyed. This coordination requires significant numbers of both internal transactions among managers in geographically diverse units, and external transactions with government officials and agencies, suppliers, and customers.

In turn, these transaction costs and the differences encountered across geographic regions greatly increase managerial information-processing demands. Logistical costs, trade barriers, and cultural diversity make manage-

ment of internationally diversified firms highly complex. Additionally, institutional and cultural factors establish strong barriers to the transfer of competitive advantages across country borders (Kogut, 1985). Factors' costs (e.g., wages, capital charges) may vary considerably across countries, and these differences greatly increase the risks associated with decisions to allocate resources across the various product markets in which a firm operates. Furthermore, these risks cannot be easily hedged. Thus, to manage the large number of complex transactions and to make effective decisions regarding resource allocations and selection of strategies requires that managers efficiently process significant amounts of information. For example, given multiple competitors and their different strategic orientations and differences in customers, managers may have to redesign marketing programs and develop new distribution networks in order to operate effectively in different international markets. These managerial information-processing demands are similar to those Chandler (1962) identified in his classic work on product diversification. However, information-processing demands are more complex and greater when firms move into new international markets than when they move into different product markets within the same domestic setting.

As a result of the transaction costs and increasing managerial information-processing demands, the costs of international diversification will eventually exceed the benefits of such diversification. In other words, the internal governance costs exceed the benefits provided by the economies achieved and thus, the range of resources used and scope of governance exceeds managerial capabilities. Of course, the point at which this occurs will vary with the managerial skills contained in a firm. However, the arguments noted above suggest that the relationship between international diversification and performance is, indeed, nonlinear. Such nonlinearity would help explain the conflicting findings of past research. Furthermore, the above arguments imply that moderate levels of international diversification should produce benefits that exceed costs, but higher levels will reach a threshold (cf. Geringer et al., 1989), beyond which international diversification escalates the costs and erodes the performance of the firm. The logic presented above suggests the following hypothesis.

> *Hypothesis 1. The relationship between international diversification and firm performance is nonlinear, with the slope positive at low and moderate levels of international diversification but negative at high levels of international diversification.*

International Diversification and Innovation

In early theoretical work, economists argued that firms producing innovation had the motivation to geographically diversify to achieve more and higher returns on their investments in producing the innovation (e.g., Caves,

1982). This is a logical argument as international diversification should improve the "appropriability regime" of innovation (Teece, 1986). Furthermore, firms operating only in domestic markets may find it difficult or time consuming to recoup such initial investments. Indeed, in high-technology industries with rapid technological obsolescence (Kotabe, 1990), such investments may not be recoverable before the innovations become obsolete. However, compelling arguments from the resource-based view of the firm and organizational learning theory suggest that the relationship may be reversed in the case of international diversification. That is, international diversification may have a positive effect on firm innovation. This is particularly true in the new competitive landscape in which increased global competition in many markets has placed more emphasis and importance on innovation as a means to develop and maintain competitive advantages (Bettis & Hitt, 1995).

International diversification can help firms use the selective advantages of multiple countries, and innovation can help overcome local disadvantages. As such, innovation may help a firm achieve a competitive advantage in international markets (Porter, 1990). Additionally, increased global competition has shortened product life cycles and increased the investment required to develop significant technological advances. As a result, the generation of innovation may require significant investment of resources. International diversification may generate the resources necessary to sustain a large-scale R&D operation (Kobrin, 1991). Furthermore, multinational firms may be better able to retain their innovative capabilities by tapping the various resources available globally (Kotabe, 1990). Thus, internationally diversified firms have access to more and different resources and, because of the larger markets and potentially greater returns, they have more resources to invest in innovation. Undoubtedly, an improved ability to appropriate returns from innovation provides extra incentives for internationally diversified firms to invest in and develop innovation.

Diverse inputs are often required to develop innovation. International diversification provides the opportunity for new and diverse ideas from a variety of market and cultural perspectives. This suggests that internationally diversified firms have greater opportunities to learn (increasing organizational knowledge) than do purely domestic firms. Also, new knowledge can lead to innovation (Miller, 1996).

From the resource-based view of the firm (Conner, 1991), the ability to produce innovation may be important to achieving strategic competitiveness, as noted earlier. Thus, we expected firms that invested more resources to develop innovative capabilities would be likely to perform better over the long term. However, strong investment is particularly important in internationally diversified firms if they are to gain competitive advantages in highly competitive global markets. As was argued, international diversification provides incentives for firms to invest the resources necessary to build and maintain innovation abilities. Furthermore, firms may generate the financial resources and develop the new knowledge necessary to produce innovation.

In summary, international diversification provides firms with incentives to invest in innovation, resources to invest in innovation, and greater returns from innovation. As a result, international diversification should have a positive effect on firm innovation. The logic described above suggests the following hypothesis:

Hypothesis 2. International diversification has a positive effect on firm innovation.

Interaction Effects of Product and International Diversification

Many internationally diversified firms also operate in multiple and disparate product markets. Product diversification has been a popular strategy (Rumelt, 1974). However, the evidence regarding the performance implications of this strategy has been decidedly mixed (Hoskisson & Hitt, 1990; Ramanujam & Varadarajan, 1989). Hoskisson and Hitt (1990) argued that the relationship between product diversification and performance is far more complex than previous research has portrayed it as being.

Although we expected moderate levels of international diversification to be, in general, positively related to performance, such actions in single business (non–product-diversified) firms may be difficult to implement. Early international diversification efforts are commonly implemented through a special international unit (a department or division). Often, executives in single-business firms have no experience managing internal diversity and the complexity it creates. For example, the use of an international department or division as a profit center to manage international sales provides the opportunity for conflict over transfer prices. The unit transferring the product has incentives to maximize the price to achieve the greatest profits, and the international unit receiving the product has incentives to minimize the transfer price in order to maximize its own profits. However, as a firm diversifies its product line, it is also likely to adopt a multidivisional structure (Chandler, 1962; Hoskisson, 1987; Hoskisson & Hitt, 1988). Although these firms are often decentralized, they are also more likely to have formal transfer pricing policies and mechanisms designed to reduce potential conflict and promote cooperation. These structural mechanisms, then, facilitate transactions across units, thereby reducing transaction costs.

In addition, early product diversification actions frequently focus on highly related product markets (Tallman & Li, 1996). Thus, there are ample opportunities to achieve synergies. The research suggests that firms with more narrow scope (e.g., dominant-business and related-constrained firms) should be higher performers if they are able to capture the potential synergies between their businesses (Geringer et al., 1989; Rumelt, 1974). When such firms are also diversified internationally, they have increased opportunity to achieve economies of scale and scope. An integration of product and international diversification helps firms exploit interdependencies across their businesses to achieve potential synergies. Thus, from the resource-based view of the firm, the structures and capabilities developed to

implement product diversification strategies can also help implement international diversification.

In support of these arguments, Kim, Hwang, and Burgers (1989) found that an integrated related-product and international diversification strategy helped achieve profit stability. The differences in factor markets and in supply and demand for different products help stabilize returns in such firms. Also, Kim and colleagues found that an integrated unrelated-product and international diversification strategy helped achieve profit growth. Unrelated product diversification spreads the risk across product markets, thereby reducing the probability of severe losses and increasing the probability of achieving a positive return.

Also, global markets are often characterized by intense competition (Hitt, Keats, & DeMarie, 1995). Achieving synergies and economies (e.g., sharing resources) across products and geographic units provides firms greater ability to compete effectively in such markets. Lei, Hitt, and Goldhar (1996) and Hitt and colleagues (1995) argued that an integrated low-cost and differentiation strategy is often necessary to compete in many global markets. Because of intense competition and increasing technological capabilities, some firms develop the ability to provide unique, innovative products at low prices (thereby exercising both a low-cost and differentiation strategy). This type of strategy places intense pressure on competitors to do likewise or risk operating at a competitive disadvantage (these firms may eventually focus on specific market niches to avoid the competition or leave the market altogether). Thus, firms that are able to capture the synergies and economies from product and international diversification strategies can better implement integrated business-level strategies (offering differentiated products at lower prices than competitors).

Unrelated firms may be able to achieve unique and inimitable synergies beyond purely financial ones when operating in international markets. Unique and inimitable synergies among units operating in international markets may be likely in unrelated, product-diversified firms because of the differences among the business units. Harrison, Hitt, Hoskisson, and Ireland (1991) found that differences in resource allocation patterns across firms' business units produced higher performance than did similarities. Firms were able to achieve complementarities between different resources in separate business units that were difficult for competitors to imitate. Thus, the complementarities between unrelated product diversification and international diversification help a firm achieve economies of scale and scope to degrees unavailable from either form of diversification alone. Therefore, taking a resource-based perspective, we expected product diversification to moderate the relationship between international diversification and performance in such a way that internationally diversified firms that were also product diversified would achieve higher performance than internationally diversified firms that were not product diversified. This expectation suggests that because of efficient structure, better governance, and enhanced managerial capabilities (learned from experience with diversity), the apex of the

curvilinear relationship between international diversification and performance shifts upward and to the right.

> *Hypothesis 3. Product diversification positively moderates the curvilinear relationship between international diversification and firm performance.*

Economists have generally predicted a positive relationship between product diversification and innovation (e.g., Nelson, 1959). They have argued that diverse operations lead to increased knowledge spillover between divisions. However, research has found that even small-to-moderate amounts of product diversification have a negative effect on R&D intensity. Baysinger and Hoskisson (1989) and Hitt, Hoskisson, and Ireland (1990) argued that as firms become increasingly product diversified, corporate executives shift from strategic to financial controls because of information asymmetries, information overload, and inability to adequately understand the operations of each of the separate businesses competing in diverse markets. According to Tallman and Li (1996), governance scope exceeds management capabilities (i.e., strategic control capabilities) in highly product-diversified firms. Emphasis on financial controls can produce a short-term orientation and risk-averse actions by division managers (Hoskisson & Hitt, 1988). Hitt, Hoskisson, Johnson, and Moesel (1996) found that emphasis on financial controls was negatively related to firm innovation. Accordingly, empirical research supports a negative relationship between product diversification and innovation. For example, Hoskisson and Hitt (1988) and Baysinger and Hoskisson (1989) found that U.S. firms with greater product diversification invested less in R&D. Doi (1985) found the same relationship among extensively diversified Japanese firms.

Although there are incentives for innovation in internationally diversified firms, product diversification provides disincentives for innovation. As noted above, product diversification leads to a shift from strategic to financial controls. Strategic controls require corporate executives to have an effective understanding of each of their separate businesses (so they can evaluate the strategies employed by business-unit managers). Strategic controls also require substantial coordination and face-to-face interaction between corporate and business-unit managers. Thus, as firms become more product diversified (have more and different businesses), corporate executives must process more and increasingly diverse information about the businesses and their markets and must deal with a substantially greater number of transactions. Also, overemphasis on financial controls reduces long-term investments such as R&D, partially because the incentive compensation system for business-unit managers reduces the attractiveness of such investments (Hoskisson, Hitt, & Hill, 1993). Business-unit managers experience more risk when financial controls are emphasized. One way to reduce this risk is to lower R&D expenditures. Thus, we expected product diversification to have a negative effect on the relationship between international diversification and innovation. Smaller investments in R&D were expected in internation-

ally diversified firms that were product diversified than in those that were not product diversified.

Hypothesis 4. Product diversification negatively moderates the relationship between international diversification and firm innovation.

METHODS

Sample

The sample for this study was drawn from Standard & Poor's COMPUSTAT database. To be included, a firm had to: (1) be a manufacturing firm, (2) have average sales exceeding $100 million between 1988 and 1990, and (3) demonstrate either product or international diversification, or both. The $100 million cut-off helped ensure firms had adequate size to achieve the economies for which we have argued. Also, there is little publicly available data on smaller firms. To have included smaller firms would have resulted in significant amounts of missing data and a potentially less representative sample of the universe studied. Our resulting sample is representative of midsize and large firms that have nontrivial product diversification and/or are competing in international markets.

To smooth annual fluctuations in the accounting data, we used a three-year average for the 1988 through 1990 period for each variable in the study (a two-year average was used for a small subsample of firms because of missing data). The final sample comprised 295 firms.

Primary Measures

Performance. Three accounting-based measures were initially considered as possible indicators of firm performance: return on assets (ROA), return on sales (ROS), and return on equity (ROE). ROE was ruled out because it is more sensitive to capital structure differences. Both ROA and ROS generated similar findings and were highly correlated ($r = .91$). Given that both ROS and the control variables in our regression equations are functions of total sales, regression equations with ROS as the dependent variable might reflect mathematical artifacts as well as true relations (Farris, Parry, & Ailawadi, 1992). Therefore, we chose ROA rather than ROS as the dependent variable.

R&D intensity. R&D intensity was used as a proxy for innovation. It has been found to be positively related to measures of innovative output such as patents (Hitt, Hoskisson, Ireland, & Harrison, 1991) and new product introductions (Hitt et al., 1996). R&D intensity was measured as the ratio of research and development expenditures to a firm's total number of employees (Hill & Snell [1988] used a similar measure). Use of this ratio avoided problems of an artificial relationship with firm size (measured with firm sales). The R&D intensity ratio is widely used in studies of innovation (e.g.,

Baysinger & Hoskisson, 1989; Hambrick & MacMillan, 1985; Hoskisson & Hitt, 1988).

Product diversification. The entropy measure of product diversification (Jacquemin & Berry, 1979; Palepu, 1985) was employed to measure product diversification strategy. This index has become increasingly popular in strategic management research (e.g., Baysinger & Hoskisson, 1989; Hill, Hitt, & Hoskisson, 1992; Hitt et al., 1996; Hoskisson, Johnson, & Moesel, 1994; Palepu, 1985). Also, it has been reported to generate estimates of product diversification similar to those based on Rumelt's (1974) subjective categorization methods and to evidence construct validity (Hoskisson, Hitt, Johnson, & Moesel, 1993). The entropy measure of product diversification (*PDT*) is defined as

$$PDT = \Sigma_i [P_i \times \ln(1/P_i)],$$

where P_i is the sales attributed to segment i and $\ln(1/P_i)$ is the weight given to each segment, or the natural logarithm of the inverse of its sales. The measure considers both the number of segments in which a firm operates and the proportion of total sales each segment represents.

Total product diversification can be separated into related (*PDR*) and unrelated (*PDU*) product diversification components, such that $PDT = PDR + PDU$. Related product diversification captures diversification across four-digit Standard Industrial Classification (SIC) industries within a two-digit SIC industry, and unrelated product diversification captures diversification across two-digit SIC industries.

International diversification. An entropy approach was also employed to measure international diversification strategy (i.e., the extent of diversification across foreign market areas). Several measures of international diversification have been used in previous research. The most common form has been a unidimensional measure of international sales as a percentage of total sales (or sometimes foreign assets as a percentage of total assets; e.g., Geringer et al., 1989). Others have criticized using a unidimensional measure, recommending instead a multidimensional measure (Sullivan, 1994). Unfortunately, Ramaswamy, Kroeck, and Renforth (1996) tested and found little support for the multidimensional measure developed by Sullivan (1994).

The measure developed and used by Kim and his colleagues (e.g., 1989, 1993) initially seemed to have promise. Kim's measure uses an entropy approach to weight diversification by market area. Because sales revenues by country are largely unavailable from secondary sources, Kim and colleagues used a firm's number of employees in a country as a proxy for the amount of business in that country. However, Kim encountered considerable missing data on numbers of employees, which calls into question the use of this proxy. Also, the Kim measure combines product and international diversification. This measure, then, is questionable, given our theoretical arguments regarding the independent and interactive effects of these two variables.

Given the criticism of and concerns about these previous measures, we developed an entropy measure of international diversification to account for the extent of sales outside the domestic market and their distribution globally. Because of the lack of sales data at the country level, we used regional markets. Thus, the measure of distribution of international diversification captures regionalization.

The entropy measure of international diversification is defined as

$$ID = \Sigma_i[P_i \times \ln(1/P_i)],$$

where P_i is the sales attributed to global market region i and $\ln(1/P_i)$ is the weight given to each global market region, or the natural logarithm of the inverse of its sales. The measure considers both the number of global market regions in which a firm operates and the relative importance of each global market region to total sales. To calculate the entropy measure, following Hirsch and Lev (1971) and Miller and Pras (1980) and using the international market sales data available in the COMPUSTAT geographic segment tapes, we classified foreign markets into four relatively homogeneous global regions: Africa, Asia and Pacific, Europe, and the Americas. This action is based on the increasing importance of the regional economies (Ohmae, 1985, 1995). For example, Morrison and Roth (1992) found that competitive battles were much more regional than global in scope.

To provide validity evidence for this measure, we matched firms in our sample with firms from which we had survey measures of international diversification provided by a member of the top management team (more information on this survey appears in Hitt et al. [1996]). There was a match for 67 firms. We found strong positive correlations between our entropy measure of international diversification and survey measures of foreign assets/total assets ($r = .55$, $p < .0001$) and foreign sales/total sales ($r = .69$, $p < .0001$), two common measures of international diversification used in prior research (cf. Geringer et al., 1989; Tallman & Li, 1996). Although we would not expect a perfect correlation between these measures because the entropy measure is finer grained (weighted by the sales and the number of different global regions in which a firm operates), we expected a stronger relationship with the foreign sales ratio because our measure also employs sales. Additionally, we found a statistically significant, positive correlation with the country scope variable ($r = .36$, $p < .01$) employed by Tallman and Li (1996). These tests suggest that our measure captures the extent and distribution of diversification as planned. We conclude that these results (based on data from three independent sources) provide strong evidence of the validity of our entropy measure of international diversification.

Control Variables

We included several control variables. First, because our measure of international diversification emphasizes regionalization, we included a measure of country scope as a control (Tallman & Li, 1996). Country scope

was defined as the number of countries in which a firm has foreign operations.

Additionally, changes in performance and innovation could be attributed to the mode of international diversification as opposed to the act of diversifying across regional or country borders. Thus, we included as control measures the number of mergers and acquisitions (net of divestitures) and the number of strategic alliances undertaken by sample firms during the study period. Both of these variables have been argued to affect firm outcomes (e.g., performance and innovation; Gulati, 1995; Hitt et al., 1996; Madhavan & Prescott, 1995). We used the total number of mergers and acquisitions and strategic alliances, including both foreign and domestic ones. Results were basically the same when we included only international mergers and acquisitions and strategic alliances. Also, results were unchanged when we used the total number of mergers and acquisitions without subtracting the number of divestitures.

We considered two methods to control for industry effects. The first method employs dummy variables representing each firm's primary two-digit industry as a measure of industry effects in the regression equation. The other method employs the average ROA or R&D intensity of all firms classified by COMPUSTAT into each firm's primary two-digit industry. However, the average ROA or R&D intensity obtained from COMPUSTAT may be an inappropriate way to represent industry effects on firms with operations in multiple countries. Therefore, we chose to use dummy variables to represent industry effects.

Firm size, measured by the natural logarithm of total sales, was used to control for economies and diseconomies of scale at the corporate level. The industrial organization economics literature suggests that R&D intensity is an important determinant of firm profitability (Hay & Morris, 1979). Similarly, capital structure (particularly debt) has been argued to affect firm performance (Hitt & Smart, 1994; Jensen, 1989). To avoid artificial correlations (ratio error correlation), we measured financial structure as the ratio of total liabilities to total sales for the regression equations with ROA as the dependent variable and measured it as the ratio of total liabilities to assets for the regressions with R&D intensity as the dependent variable.

RESULTS

Table 1 reports means, standard deviations, and intercorrelations for all variables used in the study. The correlations among the independent variables and other diagnostic tests we conducted suggested no problem of multicollinearity (see the variance inflation factors in Tables 2 and 3).

Tables 2 and 3 present the results of regression analyses testing the hypotheses. The first equation in Table 2 is an examination of the main effects of international diversification on ROA. There is a statistically significant, positive relationship between international diversification and performance. Furthermore, there is a negative relationship between interna-

658.05
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f 7752

TABLE 1
Means, Standard Deviations, and Correlations

Variables	Mean	s.d.	2	3	4	5	6	7	8	9	10
1. ROA	0.04	0.07	.01	−.05	−.41**	−.25**	.08	−.04	.06	−.07	.01
2. R&D intensity	4.33	5.49		−.07	−.25**	−.13*	−.04	.11*	.11^{+}	−.39**	.39**
3. Sales	6.42	1.46			.17**	.20**	.33**	.37**	.26**	.48**	.06
4. Debt/assets	0.59	0.30				.64**	−.03	.04	−.09	.19**	−.15*
5. Debt/sales	0.67	0.48					.04	.14*	−.08	.18**	.01
6. Mergers and acquisitions	0.70	1.95						.40**	.23**	.22**	.03
7. Strategic alliances	0.18	0.62							.11*	.23**	.01
8. Country scope	2.99	6.36								−.02	.36**
9. Product diversification	0.54	0.50									−.37**
10. International diversification	0.47	0.39									

* $p < .05$
** $p < .01$

tional diversification squared and ROA. The latter relationship suggests a curvilinear relationship and combined, these two relationships denote a potential inverted-U shaped relationship between international diversification and performance, thereby supporting Hypothesis 1.

To examine the curvilinear relationship between international diversi-

TABLE 2
Effects of International and Product Diversification on ROA[a]

Independent Variables	Model 1	Model 2
Intercept	0.057*	0.073*
	(0.028)	(0.029)
	(0.000)	(0.000)
Sales	−0.002	−0.003
	(0.004)	(0.004)
	(2.221)	(2.248)
Debt/sales	−0.040**	−0.038**
	(0.009)	(0.009)
	(1.172)	(1.179)
R&D intensity	−0.001	−0.000
	(0.001)	(0.001)
	(1.629)	(1.647)
Mergers and acquisitions	0.004	0.004
	(0.002)	(0.002)
	(1.403)	(1.403)
Strategic alliances	−0.002	−0.002
	(0.008)	(0.008)
	(1.470)	(1.474)
Country scope	0.000	0.000
	(0.001)	(0.001)
	(1.384)	(1.390)
Product diversification	−0.004	−0.018
	(0.012)	(0.014)
	(2.072)	(3.017)
International diversification	0.059†	0.039
	(0.035)	(0.037)
	(12.182)	(13.379)
International diversification squared	−0.054†	−0.055†
	(0.030)	(0.030)
	(10.929)	(10.929)
Product × international diversification squared		0.036†
		(0.020)
		(2.545)
R^2	.19	.20
F	2.25**	2.30**

[a] Industry dummy variables are included in the models, but regression coefficients are not shown for them. Standard errors are in the first parentheses; variance inflation factors are in the second parentheses. For both models, $n = 293$.

† $p < .10$

* $p < .05$

** $p < .01$

fication and performance in more depth, we cluster-analyzed the sample of firms, grouping them on their international diversification scores following a procedure used by Hitt and Middlemist (1978). The analysis suggested two subgroups, firms with international diversification scores below .30 and those with scores of .30 and above. Subgroup 1 was composed of 107 firms with international diversification scores below .30, and subgroup 2 was composed of 186 firms with scores of .30 and above. We then developed regression models for each group to examine the relationship between international diversification and performance. As Table 4 shows, the relationship between international diversification and ROA was positive for subgroup 1, and the relationship was negative in the model for subgroup 2. These results support the hypothesized inverse U-shaped curvilinear relationship. Thus, in our sample, low and moderate levels of international diversification are positively related to firm performance, but further international diversification is likely to produce negative performance effects.

The first equation in Table 3, showing the effects of international diversification on R&D intensity, is statistically significant, and the regression model accounts for almost 40 percent of the variance in R&D intensity. The statistically significant, positive coefficient associated with international diversification provides support for Hypothesis 2. Also, consistent with prior research (e.g., Baysinger & Hoskisson, 1989; Doi, 1985; Hoskisson & Hitt, 1988), product diversification had a negative effect on R&D intensity.

The second equation in Table 2 shows the interaction effect of product diversification and international diversification squared on RCA. The statistically significant, positive effect of the interaction on ROA provides support for Hypothesis 3 ($\Delta F = 3.54$, $p < .01$). The positive sign suggests that product-diversified firm performance (ROA) is enhanced as a firm diversifies internationally.

To examine the effects of the interaction of international diversification and product diversification on firm performance in more depth, we separated the sample into subgroups based on product diversification level. Subgroup 1 ($n = 105$) consisted of nondiversified (single-business) firms. Subgroup 2 ($n = 92$) consisted of moderately product-diversified firms (below the mean entropy score of .813), and subgroup 3 ($n = 98$) consisted of highly product-diversified firms (above the mean entropy score of .813). We examined the interaction effects by graphing the relationship between international diversification and performance in these three groups. Figure 2 depicts these relationships.[1]

The relationships depicted provide some support for the theoretical arguments presented earlier. For example, the relationship between international diversification and performance in non–product-diversified firms is

[1] The equations for the three graphed lines presented in Figure 2 are as follows: Nonproduct diversifiers, $ROA = .13 - .18 \times ID + .08 \times ID^2$; moderate product diversifiers, $ROA = .04 + .14 \times ID - .13 \times ID^2$; and high product diversifiers, $ROA = .02 + .05 \times ID - .01 \times ID^2$. The inflection points for the curves are 1.0796, 0.5157, and 1.8873, respectively.

TABLE 3
Effects of International and Product Diversification on R&D Intensity[a]

Independent Variables	Model 1	Model 2
Intercept	2.917	1.560
	(1.803)	(1.898)
	(0.000)	(0.000)
Sales	0.549*	0.600*
	(0.267)	(0.266)
	(2.225)	(2.242)
Debt/assets	−2.198*	−2.334*
	(0.955)	(0.951)
	(1.201)	(1.206)
Mergers and acquisitions	−0.291†	−0.271*
	(0.157)	(0.156)
	(1.369)	(1.374)
Strategic alliances	1.505**	1.465**
	(0.499)	(0.496)
	(1.401)	(1.403)
Country scope	−0.046	−0.046
	(0.048)	(0.048)
	(1.350)	(1.350)
Product diversification	−3.131**	−1.500
	(0.723)	(1.044)
	(1.889)	(3.992)
International diversification	2.141*	3.992**
	(0.858)	(1.210)
	(1.664)	(3.361)
Product × international diversification squared		−3.342*
		(1.552)
		(3.752)
R^2	.40	.41
F	6.98**	6.98**

[a] Industry dummy variables are included in the models, but regression coefficients not shown for these dummies. Standard errors are in the first parentheses, variance inflation factors in the second parentheses. For both models, $n = 293$.

† $p < .10$
* $p < .05$
** $p < .01$

largely negative. The relationship between international diversification and performance in highly product-diversified firms is largely positive. In contrast, the effects of international diversification and performance in moderately product-diversified firms is initially positive but becomes negative with further international diversification. Thus, the proposed inverted U-shaped relationship between international diversification and performance is most prominent among moderately product-diversified firms. Interestingly, as firms that are not product diversified continue to diversify internationally, such actions eventually begin to have a positive effect. Alternatively, the positive relationship between international diversification and performance in highly product-diversified firms eventually begins to level

TABLE 4
Results of Subgroup Analysis of the Curvilinear Relationship between International Diversification and ROA[a]

Independent Variables	Subgroup 1	Subgroup 2
Intercept	0.091†	0.076*
	(0.052)	(0.036)
	(0.000)	(0.000)
Sales	−0.006	0.000
	(0.007)	(0.005)
	(2.044)	(2.752)
Debt/sales	−0.067**	−0.031**
	(0.020)	(0.011)
	(1.238)	(1.292)
R&D intensity	0.002	−0.001
	(0.004)	(0.001)
	(1.833)	(1.477)
Mergers and acquisitions	0.003	0.003
	(0.006)	(0.003)
	(1.564)	(1.563)
Strategic alliances	−0.000	−0.004
	(0.020)	(0.009)
	(1.310)	(1.671)
Country scope	−0.002	0.000
	(0.005)	(0.001)
	(2.115)	(1.325)
Product diversification	−0.009	−0.001
	(0.023)	(0.014)
	(1.335)	(2.237)
International diversification	0.193†	−0.034†
	(0.115)	(0.021)
	(1.807)	(1.318)
R^2	.28	.22
F	1.33†	1.79*

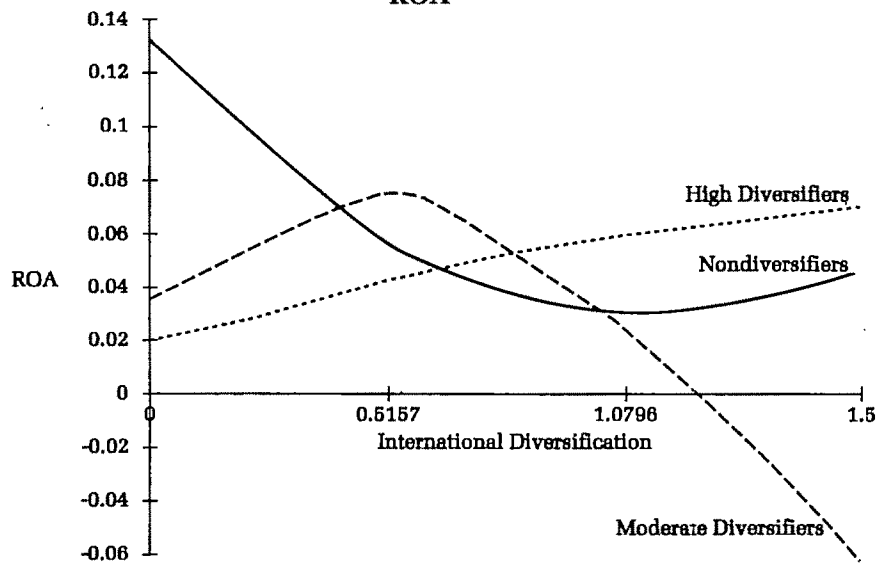
[a] Industry dummy variables are included in the models, but regression coefficients are not shown. Standard errors are in the first parentheses; variance inflation factors are in the second parentheses. For subgroup 1, $n = 107$; for subgroup 2, $n = 186$.

† $p < .10$
* $p < .05$
** $p < .01$

off with high levels of international diversification (indicating decreasing returns to international diversification after some point in these firms). These results generally support the theoretical arguments presented earlier, but they also suggest that the relationship is more complex than others have thought.

The second equation in Table 3 shows the interaction effect of product and international diversification on R&D intensity. The interaction effect was statistically significant and negative, thereby providing support for Hypothesis 4 ($\Delta F = 5.07$, $p < .01$). The negative sign suggests that the R&D

FIGURE 2
Interaction Effects of Product and International Diversification on ROA[a]

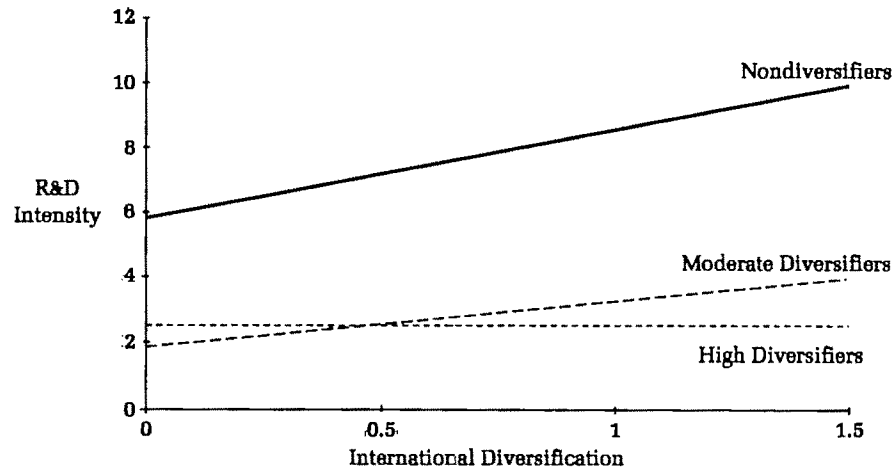


[a] Nondiversifiers consist of single-business firms; moderate diversifiers consist of firms whose product diversification scores are lower than .813; and high diversifiers consist of firms whose product diversification scores are .813 or higher.

intensity of an internationally diversified firm decreases as it diversifies into new product lines. We conducted the same analysis with the related and unrelated product-diversification components separately. Only the negative interaction coefficient between unrelated product and international diversification reached statistical significance ($p < .05$). This finding suggests that unrelated product diversification particularly discourages R&D investment in internationally diversified firms.

Focused on the total diversification score, we conducted further analyses to examine this relationship in more depth. As in the analyses with ROA as the dependent variable, we graphed the relationship between international diversification and R&D intensity for nondiversified firms and for moderately and highly product-diversified firms. Figure 3 depicts these relationships. As shown, for firms that are not product diversified, the relationship between international diversification and R&D intensity is the most positive. Although the relationship is slightly positive for moderately product-diversified firms, there is virtually no slope for the highly product-diversified firms. The graph shows that firms that are not product diversified invest much more in R&D than highly product-diversified firms (Chow test significant at $p < .05$). Thus, product diversification partially attenuates the positive effects of international diversification on R&D investments.

FIGURE 3
Interaction Effects of Product and International Diversification on R&D Intensity[a]



[a] Nondiversifiers consist of single-business firms; moderate diversifiers consist of firms whose product diversification scores are lower than .813; and high diversifiers consist of firms whose product diversification scores are .813 or higher.

DISCUSSION

The results provide support for all four hypotheses. In some cases, the post hoc analyses provide information for a finer-grained interpretation of the relationships posed and suggest some interesting and potentially important conclusions.

International diversification was found to have a curvilinear relationship with performance. The results suggest that early efforts to diversify internationally are often positive. It appears that international diversification can produce economies of scale, scope, and experience, as Kogut (1985), Kobrin (1991), and others have suggested. As a result, such diversification should not only stabilize returns (Caves, 1982), but should also increase them because of the competitive advantages gained (Kim et al., 1993). This observation suggests that firms can, indeed, take advantage of their internal resources. However, as predicted, the effects of international diversification eventually level off and become negative. The linear main effect for international diversification on performance was positive, and the curvilinear effect was negative. The subgroup analyses suggested that the effects become negative with greater levels of international diversification. The finding of a curvilinear effect that begins positive and eventually turns negative fits the theoretical arguments (based on the resource-based view of the firm and transaction costs theory) presented. This finding supports the post hoc re-

sults found by Geringer and colleagues (1989) and suggests that international diversification eventually becomes highly complex and difficult to manage. At some point, the complexity overwhelms the positive benefits of international diversification, and performance begins to suffer.

Porter (1990) suggested that the complexity of international diversification is derived from increased coordination and distribution costs. Coordination and distribution are exacerbated by trade barriers, logistical costs, cultural diversity, and other country differences. The need for local subsidiaries to have autonomy so that they can address market idiosyncrasies, along with the need for coordination across countries to achieve economies of scale, scope, and learning, greatly increase transaction costs and thus enhance managerial information-processing demands. Although the managerial skills needed to handle the information-processing demands vary by firm, the results suggest that the costs of international diversification eventually exceed the benefits derived from it.

The results of our study also suggest that the relationship between international diversification and performance is even more complicated than the nonlinear relationship reveals. Indeed, one of the most important and interesting findings is that the extent of a firm's product diversification moderates the nonlinear relationship between international diversification and performance. The findings largely support the theoretical arguments presented earlier but also diverge from them in one important way.

The results suggest that single-business firms are frequently unable to capture the benefits of international diversification. In these firms, the relationship between international diversification and performance was found to be largely negative. As explained earlier, executives of single-business firms rarely have experience managing internal diversity and the complexity it creates. Without this experience, they are unlikely to have developed adequate skills in managing information-processing demands. Thus, the learning needed to prepare for managing international diversification has not occurred. Furthermore, single-business firms do not have organizational structures appropriate for managing these information-processing demands. Indeed, they may develop structures (e.g., international divisions) that actually heighten transaction costs and information processing (e.g., produce conflict over internal transfer prices). The results indicate that continuing international diversification may eventually produce positive returns in single-business firms. Executives in these firms, then, may develop the necessary skills over time, or build appropriate structures for effectively managing international diversification, or both. These results suggest that managerial and organizational learning takes place.

In turn, the results suggest that moderately product-diversified firms receive positive returns from early international diversification efforts. As argued earlier, these firms are more likely to operate in related product markets, and international diversification then enhances the opportunity to achieve economies of scale and scope. In this way, integration of product and international diversification helps firms exploit interdependencies

across their businesses to achieve synergies. However, the inverted U-shaped relationship between international diversification and performance was most evident in these firms. At some point, the relationship between international diversification and performance levels off and then becomes negative. In fact, the results suggest that continuing international diversification efforts after this point produces the most negative performance exhibited among the types of firms studied. These results clearly indicate that the complexity created by combined product and international diversification becomes difficult to manage.

Because early product diversification efforts often focus on highly related product-markets, these firms have probably implemented a cooperative multidivisional (M-form) structure (Hill et al., 1992). A cooperative M-form is designed to facilitate coordination among related businesses with significant structural integration among units and substantial centralized direction and oversight by the corporate office (Hitt, Ireland, & Hoskisson, 1997; Hoskisson, Hill, & Kim, 1993). Higher levels of international diversification place significant strains on such structures in at least two ways. Movement into more international markets significantly increases managerial transaction costs and information-processing demands. Coordination and integration costs are higher, and the diversity of cultures and market characteristics strains managerial abilities to understand them. Additional international diversification also strains the ability to remain centralized. If international markets require localized responses to be competitive, centralized decision making may lead to lower performance (inability to adapt to local market conditions).

Interestingly, the relationship between international diversification and performance in highly product-diversified firms was found to be largely positive, only leveling off with high international diversification. Perhaps in highly product-diversified firms, managers have the experience and thus the skills to manage the complexity as well as the structures that partially attenuate the information-processing demands created by international diversification. These results suggest that over time firms learn with increasing product diversification, thereby allowing them to achieve positive returns from international diversification. Perhaps the firms with high levels of product and international diversification are best able to achieve a transnational capability that simultaneously accomplishes global coordination and national flexibility, as Bartlett and Ghoshal (1989) recommended.

Asea Brown Boveri (ABB) is a firm that has high product diversification and high international diversification and performs well. It seems to have achieved a transnational capability. For example, ABB purposely assembles culturally diverse corporate and divisional management teams to facilitate global integration along with local country responsibilities. More culturally diverse top management teams often have a greater knowledge of international markets and idiosyncrasies. A better understanding of the diverse markets by top managers facilitates coordination and the use of strategic controls (Hoskisson & Hitt, 1988, 1994).

Product diversification may allow a firm to compete better in global markets. In particular, the interaction of product and international diversification facilitates the effective implementation of an integrated low-cost (economies) and differentiation (synergies) strategy that provides customers with a level of value that is competitive in global markets (Hitt et al., 1995; Lei et al., 1996). More research is needed to understand the specific relationships between corporate-level strategies (international and product diversification) and business-level strategies.

Thus, the results regarding international diversification and performance suggest that firms should enter international markets cautiously, only after significant planning and preparation. In particular, managers should build their knowledge of the international markets prior to entry, thereby increasing the probability of success. This finding suggests the need for more research on the evolutionary paths of diversification (international and product). Researchers need to understand why firms choose one path over another and the consequences of the choices. There has been some research on the independent evolutionary paths of product diversification (e.g., Galbraith & Kazanjian, 1986; Hoskisson & Hitt, 1990; Rumelt, 1974) and international diversification (e.g., Bartlett & Ghoshal, 1989; Kochhar & Hitt, 1995; Rugman, 1979), but scholars need to understand the intersection of the evolutionary paths of these two major strategies.

As expected, international diversification contributed to higher innovation. This finding suggests that international diversification does, indeed, provide larger markets from which to obtain returns from innovation. It costs almost the same to develop new ideas (products or services) whether they are marketed in one country or many (Zachary, 1995). Furthermore, international diversification normally provides greater revenues to invest in innovation. For these two reasons, international diversification provides incentives for managers to invest in innovation. This is particularly important in markets where product life cycles are becoming shorter (larger markets are required for firms to earn positive returns on innovation investments rapidly) and markets that require firms to make significant investments to produce innovation (thus, more slack resources are necessary to make the investments). This finding suggests the need for more research addressing the relationship between international diversification, business-level strategies (e.g., differentiation), and innovation in specific markets.

As noted in the theoretical arguments, previous researchers have provided cogent arguments and found that innovation leads to international diversification. Given our arguments and findings and the previous work, it is possible that there is a reciprocal relationship between international diversification and innovation. This relationship should be examined in future research.

Product diversification was negatively related to R&D intensity, supporting previous research (Baysinger & Hoskisson, 1989; Hoskisson & Hitt, 1988). More importantly, however, the negative effects of product diversification partially attenuated the positive effects of international diversifica-

tion on innovation. Because of the inability to apply strategic controls and the higher emphasis on financial controls in product-diversified firms, managers have fewer incentives to invest in R&D to produce innovation. Investments in R&D are treated as expenses and thus reduce short-term returns (as the negative relationship between R&D intensity and ROA in the regression models shows). If managers' incentive compensation is based on annual profitability (financial controls), their total compensation can be negatively affected by expending funds on R&D. Additionally, product diversification disallows taking advantage of the resources for innovation provided by international diversification. In particular, the conditions often created by product diversification make it difficult to integrate resources and ideas from diverse cultures and geographic markets. However, the strength of the effects of international diversification on innovation is shown by the fact that the relationship remains positive even in highly product-diversified firms.

The findings of this study suggest mixed effects of product diversification. Although product diversification generally enhances the positive effects of international diversification on firm performance, it attenuates the positive effect of international diversification on innovation. To the extent that innovation is necessary for a firm to remain competitive in its market, overall product diversification effects may be close to zero. The lower innovation may reduce firm performance over time by the amount product diversification enhances performance in internationally diversified firms. These findings suggest that product diversification may have its most positive effects in internationally diversified firms operating in markets where innovation is of less importance. Alternatively, firms might take advantage of the benefits of product diversification and overcome its negative effects by significant international diversification. Of course, these firms must be careful not to become overdiversified internationally, or they may achieve lower rather than higher performance. More research is needed to fully understand the trade-offs in innovation and performance of product diversification in internationally diversified firms.

As explained earlier, our measure of international diversification represents an improvement over past research, but further refinements are needed in future research. For instance, a measure that directly reflects firm resources and capabilities might improve understanding of the relationships examined in our study. Furthermore, if sources of country-level sales by firm could be developed, a finer-grained measure of the distribution of international diversification (versus weighting by global region) could be used. Thus, we recommend that future researchers try to develop finer-grained measures of international diversification.

The findings of this study point to the need for future research. In addition to what we have recommended in the previous paragraphs, it is important to address how international diversification is implemented. Research on implementation should include an examination of organizational and governance structures, modes of entry, and application of managerial knowledge and capabilities, among other issues. We included mode of entry

variables in our research. Interestingly, none of these variables had statistically significant relationships with firm performance. However, mergers and acquisitions had a negative effect, and strategic alliances a positive effect, on firm investments in innovation. These relationships should be explored further in the context of international diversification.

CONCLUSIONS

This research has provided some unique and important findings. In particular, it provides a base upon which future research can build. For example, future researchers can build on knowledge of the nonlinear relationship between international diversification and performance to gain a better understanding of precisely how firms can shift the apex of the curve. Our research suggests that the slope and shape of this nonlinear relationship varies with the level of product diversification. Given that product-diversified firms may achieve higher performance from international diversification, incentive compensation programs and other governance approaches may have to be redesigned (Roth & O'Donnell, 1996). Alternatively, firms' decision makers should consider the attenuation of the positive effects of international diversification on innovation by product diversification in designing governance approaches.

Future research might examine the most effective mix of international markets for a firm to enter and the skills and organizational structure required to manage particular combinations of international markets. As noted earlier, our study also suggests a need to understand the combined evolutionary path of international and product diversification. In all cases of individual relationships found herein (e.g., between international diversification and performance in non–product-diversified and highly product-diversified firms), future research should focus on how to implement and manage increased international diversification. Finally, as noted earlier, the link between international diversification and business-level strategies should be explored.

We found considerable support for the importance of international diversification. Additionally, the findings of a curvilinear and inverted U-shaped relationship between international diversification and performance and the interaction effects of product and international diversification have important theoretical and managerial implications. These results show the critical importance of the ability to manage such diversification. Although there are multiple potential benefits, effective implementation and management of diversification (international and product) are necessary to realize those benefits. Firms that achieve transnational capabilities may have advantages that are not readily imitable by competitors, placing significant importance on the development of this capability. The study reported herein uniquely contributes to knowledge of international diversification and suggests new directions for future research. The theoretical base integrating a resource-based view of the firm, transaction costs, and organizational learn-

ing perspectives and the results of this study point scholars toward a new theory of the multinational firm.

REFERENCES

Barney, J. 1991. Firm resources and sustained competitive advantage. ***Journal of Management,*** 17: 99–120.

Bartlett, C. A., & Ghoshal, S. 1989. ***Managing across borders: The transnational solution.*** Boston: Harvard Business School Press.

Baysinger, B. D., & Hoskisson, R. E. 1989. Diversification strategy and R&D intensity in large multiproduct firms. ***Academy of Management Journal,*** 32: 310–332.

Berry, C. H. 1975. ***Corporate growth and diversification.*** Princeton, NJ: Princeton University Press.

Bettis, R. A., & Hitt, M. A. 1995. The new competitive landscape. ***Strategic Management Journal,*** 16 (special issue): 7–19.

Buhner, R. 1987. Assessing international diversification of West German corporations. ***Strategic Management Journal,*** 8: 25–37.

Caves, R. E. 1982. ***Multinational enterprise and economic analysis.*** Cambridge: Cambridge University Press.

Chandler, A. 1962. ***Strategy and structure: Chapters in the history of American industrial enterprise.*** Cambridge, MA: MIT Press.

Chang, S. J., & Choi, U. 1988. Strategy, structure and performance of Korean business groups. ***Journal of Industrial Economics,*** 37: 141–158.

Conner, K. 1991. Theory of the firm: Firm resources and other economic theories. ***Journal of Management,*** 17: 121–154.

Daniels, J. D., & Bracker, J. 1989. Profit performance: Do foreign operations make a difference? ***Management International Review,*** 29(1): 46–56.

Doi, N. 1985. Diversification and R&D activity in Japanese manufacturing firms. ***Managerial and Decision Economics,*** 6: 147–152.

Dunning, J. H. 1988. The eclectic paradigm of international production: A restatement and some possible extensions. ***Journal of International and Business Studies,*** 19(1): 1–32.

Dyas, G. P., & Thanheiser, H. T. 1976. ***The emerging European enterprise—Strategy and structure in French and German firms.*** London: MacMillan Press.

Farris, P. W., Parry, M. E., & Ailawadi, K. L. 1992. Structural analysis of models with composite dependent variables. ***Marketing Sciences,*** 11(1): 76–94.

Fladmoe-Lindquist, K., & Tallman, S. 1994. Resource-based strategy and competitive advantage among multinationals. In P. Shrivastava, A. Huff, & J. Dutton (Eds.), ***Advances in strategic management,*** vol. 10A: 45–72. Greenwich, CT: JAI Press.

Franko, L. G. 1989. Global corporate competition: Who's winning, who's losing and the R&D factor as one reason why. ***Strategic Management Journal,*** 10: 449–474.

Galbraith, J. R., & Kazanjian, R. K. 1986. ***Strategy implementation.*** St. Paul: West.

Geringer, J. M., Beamish, P. W., & daCosta, R. C. 1989. Diversification strategy and internationalization: Implications for MNE performance. ***Strategic Management Journal,*** 10: 109–119.

Ghoshal, S. 1987. Global strategy: An organizing framework. ***Strategic Management Journal,*** 8: 425–440.

Grant, R. M. 1987. Multinationality and performance among British manufacturing companies. ***Journal of International Business Studies,*** 22: 249–263.

Grant, R. M., Jammine, A. P., & Thomas, H. 1988. Diversity, diversification, and profitability among British manufacturing companies, 1972–1984. ***Academy of Management Journal,*** 31: 771–801.

Gulati, R. 1995. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. ***Academy of Management Journal,*** 38: 85–112.

Haar, J. 1989. A comparative analysis of the profitability performance of the largest U.S., European and Japanese multinational enterprises. ***Management International Review,*** 29(3): 5–18.

Hambrick, D. C., & MacMillan, I. C. 1985. Efficiency of product R&D in business units: The role of strategic context. ***Academy of Management of Journal,*** 28: 527–547.

Hamel, G. 1991. Competition for competence and interpartner learning within international strategic alliances. ***Strategic Management Journal,*** 12: 83–103.

Harrison, J. S., Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. 1991. Synergies and post-acquisition performance: Similarities versus differences in resource allocations. ***Journal of Management,*** 17: 173–190.

Hay, D. A., & Morris, D. J. 1979. ***Industrial economics: Theory and evidence.*** Oxford: Oxford University Press.

Hill, C. W. L., Hitt, M. A., & Hoskisson, R. E. 1992. Cooperative versus competitive structures in related and unrelated diversified firms. ***Organization Sciences,*** 3: 501–521.

Hill, C. W. L., & Hoskisson, R. E. 1987. Strategy and structure in the multiproduct firm. ***Academy of Management Review,*** 12: 331–341.

Hill, C. W. L., & Snell, S. A. 1988. External control, corporate strategy, and firm performance in research intensive industries. ***Strategic Management Journal,*** 9: 579–590.

Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. 1990. Mergers and acquisitions and managerial commitment to innovation in m-form firms. ***Strategic Management Journal,*** 11 (special issue): 29–47.

Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. 1994. A mid-range theory of the interactive effects of international and product diversification on innovation and performance. ***Journal of Management,*** 20: 297–326.

Hitt, M. A., Hoskisson, R. E., Ireland, R. D., & Harrison, J. S. 1991. Effects of acquisitions on R&D inputs and outputs. ***Academy of Management Journal,*** 34: 693–706.

Hitt, M. A., Hoskisson, R. E., Johnson, R. A., & Moesel, D. D. 1996. The market for corporate control and firm innovation. ***Academy of Management Journal,*** 39: 1084–1119.

Hitt, M.A., Ireland, R. D., & Hoskisson, R. E. 1997. ***Strategic management: Competitiveness and globalization,*** St. Paul: West.

Hitt, M. A., Keats, B. W., & DeMarie, S. M. 1995. ***Navigating in the new competitive landscape: Building competitive advantage and strategic flexibility in the 21st century.*** Paper presented at the annual meeting of the Strategic Management Society, Mexico City.

Hitt, M. A., & Middlemist, D. 1978. The measurement of technology within organizations. ***Journal of Management,*** 4: 47–67.

Hitt, M. A., & Smart, D. 1994. Debt: A disciplining force for managers or a debilitating force for organizations? ***Journal of Management Inquiry,*** 3: 144–152.

Hirsch, S., & Lev, B. 1971. Sales stabilization through export diversification. ***Review of Economics and Statistics,*** 53: 258–266.

Hoskisson, R. E. 1987. Multidivisional structure and performance: The contingency of diversification strategy. ***Academy of Management Journal,*** 30: 625–644.

Hoskisson, R. E., Hill, C. W. L., & Kim, H. 1993. The multidivisional structure: Organizational fossil or source of value? ***Journal of Management,*** 19: 269–298.

Hoskisson, R. E., & Hitt, M. A. 1988. Strategic control systems and relative R&D investment in large multiproduct firms. ***Strategic Management Journal,*** 9: 605–621.

Hoskisson, R. E., & Hitt, M. A. 1990. Antecedents and performance outcomes of diversification: A review and critique of theoretical perspectives. ***Journal of Management,*** 16: 461–509.

Hoskisson, R. E., & Hitt, M. A. 1994. ***Downscoping: How to tame the diversified firm.*** New York: Oxford University Press.

Hoskisson, R. E., Hitt, M. A., & Hill, C. W. L. 1993. Managerial incentives and investment in R&D in large multiproduct firms. ***Organization Science,*** 4: 325–341.

Hoskisson, R. E., Hitt, M. A., Johnson, R. A., & Moesel, D. D. 1993. Construct validity of an objective (entropy) categorical measure of diversification strategy. ***Strategic Management Journal,*** 14: 215–235.

Hoskisson, R. E., Johnson, R. A., & Moesel, D. D. 1994. Corporate divestiture intensity in restructuring firms: Effects of governance, strategy, and performance. ***Academy of Management Journal,*** 37: 1207–1251.

Hymer, S. H. 1960. ***The international operations of national firms: A study of direct foreign investment.*** Unpublished doctoral dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Itaki, M. 1991. A critical assessment of the eclectic theory of the multinational enterprise. ***Journal of International Business Studies,*** 22: 445–460.

Jacquemin, A. P., & Berry, C. H. 1979. Entropy measure of diversification and corporate growth. ***Journal of Industrial Economics,*** 27: 359–369.

Jensen, M. C. 1989. Eclipse of the public corporation. ***Harvard Business Review,*** 67(5): 61–74.

Jones, G. R., & Hill, C. W. L. 1988. Transaction cost analysis of strategy-structure choice. ***Strategic Management Journal,*** 9: 159–172.

Kamien, M. L., & Schwartz, N. L. 1982. ***Market structure and innovation.*** Cambridge: Cambridge University Press.

Kim, W. C., Hwang, P., & Burgers, W. P. 1989. Global diversification strategy and corporate profit performance. ***Strategic Management Journal,*** 10: 45–57.

Kim, W. C., Hwang, P., & Burgers, W. P. 1993. Multinationals' diversification and the risk-return tradeoff. ***Strategic Management Journal,*** 14: 275–286.

Kobrin, S. J. 1991. An empirical analysis of the determinants of global integration. ***Strategic Management Journal,*** 12 (special issue): 17–37.

Kochhar, R., & Hitt, M. A. 1995. Toward an integrative model of international diversification. ***Journal of International Management,*** 1: 33–72.

Kogut, B. 1985. Designing global strategies: Comparative and competitive value added chains (part 1). ***Sloan Management Review,*** 27 (summer): 15–28.

Kogut, B. 1984. Normative observations on the value added chain and strategic groups. ***Journal of International Business Studies,*** 15: 151–168.

Kogut, B., & Zander, U. 1993. Knowledge of the firm and the evolutionary theory of the multinational corporation. ***Journal of International Business Studies,*** 24: 625–645.

Kotabe, M. 1990. The relationship between offshore sourcing and innovativeness of U.S. mul-

tinational firms: An empirical investigation. ***Journal of International Business Studies,*** 21: 623–638.

Kumar, M. S. 1984. ***Growth, acquisition and investment.*** Cambridge: Cambridge University Press.

Lei, D., Hitt, M. A., & Goldhar, J. D. 1996. Advanced manufacturing technology, organization design and strategic flexibility. ***Organization Studies,*** 17: 501–523.

Leontiades, J. C. 1986. Going global—Global strategies vs national strategies. ***Long Range Planning,*** 19 (December): 96–104.

Love, J. 1995. Knowledge, market failure and the multinational enterprise: A theoretical note. ***Journal of International Business Studies,*** 26: 399–407.

Madhaven, R., & Prescott, J. E. 1995. Market value impact of joint ventures: The effect of industry information-processing load. ***Academy of Management Journal,*** 38: 900–915.

McDougall, F. M., & Round, D. K. 1984. A comparison of diversifying and nondiversifying Australian industrial firms. ***Academy of Management Journal,*** 27: 384–398.

Miller, D. 1996. A preliminary typology of organizational learning: Synthesizing the literature. ***Journal of Management,*** 22: 485–505.

Miller, J. C., & Pras, B. 1980. The effects of multinational and export diversification on the profit stability of U.S. corporations. ***Southern Economic Journal,*** 46: 792–805.

Morck, R., & Yeung, B. 1991. Why investors value multinationality. ***Journal of Business,*** 64: 165–187.

Morrison, A. J., & Roth, K. 1992. A taxonomy of business-level strategies in global industries. ***Strategic Management Journal,*** 13: 399–417.

Nelson, R. R. 1959. The simple economics of basic sciences research. ***Journal of Political Economy,*** 67: 297–306.

Ohmae, K. 1985. ***Triad power.*** New York: Free Press.

Ohmae, K. 1995. ***The end of the nation state: The rise of regional economies.*** New York: Free Press.

Palepu, K. 1985. Diversification strategy, profit performance, and the entropy measure of diversification. ***Strategic Management Journal,*** 6: 239–255.

Porter, M. E. 1985. ***Competitive advantage.*** New York: Free Press.

Porter, M. E. 1990. ***The competitive advantage of nations.*** New York: Free Press.

Prahalad, C. K. 1990. The changing nature of worldwide competition. ***Vital Speeches of the Day,*** 56: 354–357.

Prahalad, C. K., & Doz, Y. L. 1987. ***The multi-national mission: Balancing local demands and global vision.*** New York: Free Press.

Ramanujam, V., & Varadarajan, P. 1989. Research on corporate diversification: A synthesis. ***Strategic Management Journal,*** 10: 523–552.

Ramaswamy, K. 1995. Multinationality, configuration, and performance: A study of MNEs in the U.S. drug and pharmaceutical industry. ***Journal of International Management,*** 1: 231–253.

Ramaswamy, K., Kroeck, G., & Renforth, W. 1996. Measuring the degree of internationalization of a firm: A comment. ***Journal of International Business Studies,*** 27: 167–178.

Roth, K. 1992. International configuration and coordination archetypes for medium-sized firms in global industries. ***Journal of International Business Studies,*** 23: 533–549.

Roth, K., & O'Donnell, S. 1996. Foreign subsidiary compensation strategy: An agency theory perspective. ***Academy of Management Journal,*** 39: 678–703.

Roth, K., Schweiger, D., & Morrison, A. 1991. Global strategy implementation at the business-unit level: Operational capabilities and administrative mechanisms. ***Journal of International Business Studies,*** 22: 361–394.

Rugman, A. M. 1979. ***International diversification and the multinational enterprise.*** Lexington, MA: Lexington Books.

Rugman, A. M. 1981. ***Inside the multinationals: The economics of international markets.*** London: Croom Helm.

Rumelt, R. P. 1974. ***Strategy, structure, and economic performance.*** Cambridge, MA: Harvard University Press.

Sullivan, D. 1994. Measuring the degree of internationalization of a firm. ***Journal of International Business Studies,*** 25: 325–342.

Sundaram, A. K., & Black, J. S. 1992. The environment and internal organization of multinational enterprises. ***Academy of Management Review,*** 17: 729–757.

Suzuki, Y. 1980. The strategy and structure of top Japanese industrial enterprises 1950–1970. ***Strategic Management Journal,*** 1: 265–291.

Tallman, S., & Li, J. 1996. Effects of international diversity and product diversity on the performance of multinational firms. ***Academy of Management Journal,*** 39: 179–196.

Teece, D. J. 1986. Profiting from technological innovation. ***Research Policy,*** 15: 285–306.

Vernon, R. 1966. International investment and international trade in the product cycle. ***Quarterly Journal of Economics,*** 81: 190–207.

Vernon, R. 1971. ***Sovereignty at bay: The multinational spread of U.S. enterprises.*** New York: Basic Books.

Zachary, G. P. 1995. Behind stocks surge is an economy in which big firms survive. ***Wall Street Journal,*** November 22: A1.

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A LONGITUDINAL DISAGGREGATION OF OPERATIONAL RISK UNDER CHANGING REGULATIONS: EVIDENCE FROM THE SAVINGS AND LOAN INDUSTRY

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The reported research examines the relative contributions of prospect and agency theory explanations for specific operational risks and subsequent firm performance in regulated and unregulated environments. Specifically, this study simultaneously models competing theoretical explanations for risk using three distinct realized operational risks managed by savings and loan (S&L) firms. It then examines the effects of these risks on performance. Implications of this study argue for a mesotheoretic approach to the modeling of risk and for its disaggregation into distinct risk choices.

Built on both prospect theory (Kahneman & Tversky, 1979) and the behavioral theory of the firm (Cyert & March, 1992), a central argument in a long and robust stream of research on risk (Sitkin & Pablo, 1992) is that managers are risk takers when facing losses but are risk averse when facing gains (Bowman, 1982; Bromiley, 1991b; Fiegenbaum, 1990; Jegers, 1991; Wiseman & Bromiley, 1991, 1996). Despite the strength of these findings, significant theoretical and methodological criticisms challenge both the findings and the conclusions of this research stream. Critics have challenged both (1) the theoretical foundation underlying the explanation for these results and (2) the modeling of risk generally employed in these studies.

Agency theory challenges the prospect theory explanation for risk-return results (Fama, 1980; Fama & Jensen, 1983; Jensen & Meckling, 1976). The agency theory argument is that executives vary in their risk preferences because of incentive and monitoring arrangements, not because of decision context (Machina, 1983). Building on notions of utility theory, some agency scholars have argued that agent risk preferences may be influenced by the degree of monitoring or leverage present (Jensen & Meckling, 1976). When owner monitoring is absent, agents tend toward risk-averse choices (Amihud

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& Lev, 1981; Hoskisson & Turk, 1990; Wright, Ferris, Sarin, & Awasthi, 1996). Therefore, an inverse relationship between monitoring vigilance and firm performance (as performance falls, interest in monitoring increases) would explain increased risk taking for firms under duress. Conversely, executives of firms enjoying munificence should receive less critical attention from owners and may exhibit greater risk aversion. The use of leverage also may increase agent risk taking since the cost of debt is fixed and therefore does not reflect the risk of its use (Barnea, Haugen, & Senbert, 1985; Jensen & Meckling, 1976). Thus, leverage may promote "risk-loving" choices since the residuals from those choices are not shared with the source of capital (i.e., bond holders earn a fixed return). These arguments suggest that agency issues like ownership structure and leverage may account for observed differences in risk choices across firm performance rather than problem-framing explanations (cf. Makadok, 1996). By combining agency and prospect theory explanations into a single risk model, this article tests agency challenges to risk-return results and responds to calls for enlarging explanations of risk to include agency influences (cf. Gomez-Mejia, 1994; Sitkin & Pablo, 1992).

A second criticism focuses on the level of analysis used in capturing risk in previous studies. Although both prospect theory and the behavioral theory of the firm suggest that decision (performance) context should influence decision behavior, most field studies have captured this decision behavior indirectly through proxies for strategic choice that utilize firm-level performance measures. Fiegenbaum and Thomas (1986) used variance in firm income to evaluate decision behavior. Oviatt and Baurschmidt (1991) used the variability in returns around the time trend of firm income, and Bromiley (1991b) employed the variance in stock-analyst forecasts of firm income performance. More recently, Miller and Leiblein (1996) used the magnitude of performance shortfalls relative to an aspiration level. However, Miller and Bromiley (1990) challenged the use of such organization-level measures. They found that measures of strategic and firm performance risk loaded on separate factors. Although Miller and Bromiley (1990) did not distinguish directly between risks, their measures included a variety of specific strategic choices, including R&D investment, capital investment, and diversification. Although prior researchers have generally viewed risk as a single construct, Miller and Bromiley's research suggests that a distinction should be made between risk choices and organizational risk. Consequently, previous behavioral explanations for prior risk-return results may be questioned since it is not clear that organizational measures of risk have adequately reflected collective strategic or operational risk choices. For example, the combined risk of a collection of independently managed risk choices may differ considerably from the combined risk of choices that are managed as a portfolio (Kahneman & Lovallo, 1993; Tversky & Kahneman, 1992).

Research attempts at capturing managerial risk taking through a single risk construct may also mask possible inconsistencies or interdependencies

between different risk choices managed simultaneously (MacCrimmon & Wehrung, 1986). Indeed, in some agency-based studies of risk a trade-off between different risk choices that reflect differing risk preferences is assumed. For example, diversification has been combined with R&D investment to capture risk preference under the assumption that a preference for one corresponds to a rejection of the other (Baysinger & Hoskisson, 1990; Hoskisson, Hitt, & Hill, 1992). However, others have argued that managers may not exhibit uniform risk preferences across different choice opportunities (Bromiley & Curley, 1992). By simultaneously testing distinct operational risks in a model of risk and performance, this study also provides insight into this debate.

Third, risk research has been criticized for the measures and construct definitions employed. Although Ruefli (1990) criticized the use of variance measures of risk per se (see Bromiley [1991a] for a compelling rebuttal), Shapira (1995) leveled a more serious charge against the use of uncertainty measures in general. Shapira's (1995) survey of experienced managers showed that managers were far more concerned about downside risk than about outcome uncertainty. Therefore, risk measures that focus on uncertainty (e.g., variance measures) may be less relevant to managerial decision behavior than measures focusing on the downside risk characteristics of a choice situation (cf. Miller & Leiblein, 1996). This study addresses this concern by focusing on realized downside risk resulting from operational policy choices.

Finally, this study examines how theoretical risk influences and their effects on performance vary across changing regulatory conditions. Specifically, we modeled prospect and agency influences on risk, and risk's influence on performance, in both regulated and deregulated environments. Comparing the predicted relations across these two regulatory regimes enhances our understanding of how regulatory constraints on risk policy choices influence the strength of theoretical predictions, as well as the relation of various operational risks to firm performance.

This research extends the risk-return literature by testing whether previous risk-return findings and conclusions are robust to both agency and prospect theory arguments after methodological issues related to the measurement of risk are considered. Using a simultaneous equation model, we (1) tested competing explanations of risk-taking behavior on two distinct operational risks managed directly by savings and loan (S&L) firms: credit and interest-rate risk; (2) examined how these operational risks influenced firms' liquidity risks; (3) investigated how all three risks subsequently influenced firm performance; and (4) estimated all these relations under regulated and deregulated environments.

MODEL DEVELOPMENT

The model developed in this study contains the prediction that a firm's performance context, slack resources, ownership structure, leverage, regu-

latory supervision, investment regulations, and market rivalry in one year influence specific *realized* operational risks—defined as the observed downside risk resulting from changes in operational policies—in the next year, after firm size, economic conditions, regulatory regime, and time are controlled for. These realized operational risks simultaneously affect the firm's liquidity risk after regulatory regime and time are controlled for. Finally, all three risks influence the firm's operating performance in the following year after industry performance, regulatory regime, and time are controlled.

Explanations of Risk Choice

Risk taking in financial firms. We examined risk and performance in a single industry to observe the effects and interrelations of specific realized operational risks (defined as the observed operational costs resulting from policy choices regarding acceptable levels of risk within specific activities managed by a firm). This study captures three risks common to financial service firms: credit risk, interest-rate risk, and liquidity risk (Catanach, 1994). Credit and interest-rate risk are operational risks that directly result from investment policy (e.g., which loan applications to accept or reject) and interest-rate policy decisions (e.g., matching the interest paid on deposits to that charged on loans). Realized credit risk results when managers accept loans and other investments that have a higher probability of borrower delinquency or default. This risk parallels strategic choices among project investments with varying degrees of downside risk. Interest-rate risk decisions parallel pricing decisions. When managers accept higher levels of interest-rate risk, they either intentionally or mistakenly mismatch the repricing of their firm's assets and liabilities in such a way that the interest rate paid on liabilities rises faster than the interest earned on assets. Doing this is similar to matching purchase and sales contracts in volatile markets. For example, risk obtains when firms commit to long-term sales agreements in order to reduce revenue fluctuations while engaging in spot market transactions for raw materials. Finally, liquidity risk is a measure of the ability of a firm to meet its debt obligations. Liquidity risk results when costless assets (such as cash on hand) are unavailable to satisfy those obligations; hence, it is a threat to firm solvency. Liquidity risk is common to all types of firms (cf. Hambrick & D'Aveni, 1988).

Behavioral influences on risk. Risk-return research is largely founded on two theoretical perspectives: the behavioral theory of the firm (Bromiley, 1991b) and prospect theory (Bowman, 1982; Fiegenbaum, 1990). Despite their different intellectual traditions, advocates of the behavioral theory of the firm and of prospect theory agree that managers' choices among varying risk and value options differ with the performance contexts surrounding the choice situations. According to the behavioral theory of the firm, framing decisions around a *performance referent* (a benchmark decision makers use) in judging the level of firm performance (Laughhunn, Payne, & Crum, 1980; Payne, Laughhunn, & Crum, 1981) influences choice behavior. When performance exceeds the performance referent, decision makers have little in-

centive to entertain risk since adequate performance seems assured (March & Simon, 1958). Conversely, when performance falls short of the referent, decision makers may accept greater risk in order to improve performance. This argument parallels prospect theory predictions of risk choice (Kahneman & Tversky, 1979) in which loss aversion is assumed to drive decision behavior (Thaler & Johnson, 1990; Tversky & Kahneman, 1986, 1991). Under prospect theory, when decision makers anticipate negative changes in wealth, they display risk-seeking behavior, but when anticipating positive changes in wealth, they exhibit risk-averse behavior. In general, performance that exceeds the referent of current wealth is regarded as acceptable, and decision makers avoid taking risks that could place this performance level in jeopardy. Conversely, performance that falls below this referent is unacceptable, and decision makers opt for riskier options that provide an opportunity of reversing the situation and returning to breakeven (Thaler, 1990).

Despite the strength of the performance referent argument, support for this view has been mixed. Lant (1992) found a negative association between attainment discrepancy (measured as aspirations minus expectations) and risk taking in a laboratory study. Wiseman and Bromiley (1996) did not find such an association between attainment discrepancy and organizational risk among firms in decline. Bromiley (1991b) separately examined aspirations and expectations in a time-series model of risk and found a positive association between aspirations and organizational risk, but he did not find the predicted negative association between expectations and organizational risk. One explanation for these inconsistent findings is that the firm-level measures of risk employed in studies using secondary data may have been too coarse to capture any microlevel phenomena associated with reference-dependent choices of risk (Wiseman & Bromiley, 1996). A second explanation concerns the modeling of the decision context. If reference points are truly adaptive with performance (March & Shapira, 1992), then modeling the decision referent separately from actual performance (as some scholars have done) may have resulted in collinearity between the variables and suppressed the explanatory power of one variable. In this study, we addressed both concerns by combining the reference point and actual performance into a single measure of performance context in models of two realized operating risks. Following the behavioral theory of the firm, we predicted a negative relation between performance context and risk.

> *Hypothesis 1a. Performance context in one year exhibits a negative relation to realized credit risk in the next year.*
>
> *Hypothesis 1b. Performance context in one year exhibits a negative relation to realized interest-rate risk in the next year.*

Cyert and March (1992) argued that slack resources may also influence decision behavior. They suggested that both high and low levels of slack increase the search for new solutions, resulting in increased risk for a firm. At extremely low levels of slack, decision makers must seek changes to main-

tain solvency, and such changes may expose the firm to new risks. At extremely high levels of slack, decision makers can afford to take risks, knowing that the firm has sufficient resources to insulate it from any adverse effects related to the increased risks assumed. However, Greenhalgh (1983) argued that managers view innovation and other risk-laden activities as marginal, and thus these activities are dependent on the availability of marginal resources (i.e., slack). Therefore, in times of resource scarcity, firms become conservative and reduce risky activities. Similarly, in the threat-rigidity hypothesis, Staw, Sandelands, and Dutton (1981) argued that when a firm's survival is in doubt, it will become rigid and unable to change or take risks in order to reverse the decline. These perspectives suggest that low levels of slack should result in lower risk. Differences between the behavioral theory of the firm's hunger-driven search (Cyert & March, 1992) and the threat-rigidity view have not yet been resolved fully (Sitkin & Pablo, 1992) on either theoretical or empirical grounds. For example, Singh (1986) found positive relations between both absorbed and unabsorbed slack and organizational risk, although only absorbed slack was significant. Meanwhile, Bromiley (1991b) found significant negative influences from available, recoverable, and potential slack on risk, as well as evidence of a convex relation between available and recoverable slack and organizational risk. More recently, Wiseman and Bromiley (1996) found a negative relation between recoverable slack and organizational risk.

Researchers also disagree on what constitutes slack. A variety of measures have been used to capture different forms of slack. Slack has been conceptualized as absorbed and unabsorbed (Singh, 1986), reflecting its transferability to alternative uses. It also has been defined as being available, recoverable or potential (Bourgeois, 1981), thus reflecting different degrees of accessibility. Although it may be intrinsically appealing to distinguish different forms of slack along the lines of transferability or accessibility, there is no theoretical foundation for distinguishing between them or their effects on risk. Lacking theoretical grounds for differentiating between possible forms of slack and their effects, we relied on empirical evidence as a guide. Empirically, the most consistent slack influence on risk has been recoverable slack (also called absorbed). Recoverable slack represents excess expenses relative to rival firms and comes closest to reflecting the concept of "X-efficiency" proposed by Liebenstein (1980). Although prior research has generally supported a hunger-driven view of risk taking, we followed the behavioral theory of the firm by arguing that managers accept greater risk with both high and low levels of recoverable slack. Thus, we predict a fully convex relation whereby higher levels of realized risk correspond to both high and low levels of slack, and low risk results at moderate levels of slack.

Hypothesis 2a. Recoverable slack in one year exhibits a fully convex relationship with realized credit risk in the next year.

Hypothesis 2b. Recoverable slack in one year exhibits a

fully convex relationship with realized interest-rate risk in the next year.

Agency-based influences on risk. Agency explanations of managerial risk taking challenge behavioral explanations for risk-choice behavior in corporate settings (Hoskisson et al., 1992). Machina (1983) argued that the utility maximization view underlying many agency models of managerial behavior continues to provide a more elegant foundation for explaining risk choice than does prospect theory. Agency theorists argue that differences in risk bearing between agents and principals cause agents to exhibit different risk preferences than principals and that these differences result in agency costs for the principals. Since an agent's employment security and income are tied to one firm, but principals can diversify their share holdings across multiple firms, agents are motivated to make business decisions that have lower expected value—and that presumably pose less risk to personal wealth—than principals would prefer. The resulting "agency cost" is the difference in expected value between the agent's choice and alternative options with higher expected value and carrying greater risk. If left entirely to their discretion, agents would tend to minimize their personal risk when making decisions on behalf of principals (Chatterjee & Lubatkin, 1990; Gupta, 1987). In the words of agency theorists: "Without effective control procedures . . . decision makers are more likely to take actions that deviate from the interests of residual claimants [principals]" (Fama & Jensen, 1983: 304). This view suggests that ownership structure should influence risk choice (Bulmash, 1981).

Within the S&L industry, ownership structure is clearly distinguished by a firm's charter. Savings and loans can be chartered as either stock (shareholder-owned) or mutual (depositor-owned) institutions. Prior research indicates that stock and mutual S&Ls differ in expense preferences, risk-taking behavior, and agency costs (Benston, 1985; Catanach & Brody, 1993; Cole, 1993; Mester, 1989, 1991). These dissimilarities are attributable to differences between mutual and stock firms in the sharing of both costs and benefits of monitoring. In mutually chartered firms, ownership is dispersed among depositors, with each depositor holding an equal ownership position. Thus, benefits from monitoring are highly dispersed, but the costs of monitoring are not. In contrast, ownership in stock-chartered firms is generally more concentrated, so more monitoring can occur. The agency prediction, therefore, would be that stock-chartered firms will exhibit greater credit and interest-rate risk than do mutually chartered firms.

Hypothesis 3a. Stock-chartered S&Ls will exhibit greater realized credit risk than mutually chartered S&Ls.

Hypothesis 3b. Stock-chartered S&Ls will exhibit greater realized interest-rate risk than mutually chartered S&Ls.

Agency theory also suggests that leverage influences the risk preferences of agents. Highly leveraged firms—those with high debt-to-equity ratios—have strong incentives to prefer investments promising higher payoffs and

exhibiting higher risk than would otherwise be selected (Barnea et al., 1985; Jensen & Meckling, 1976). Agency arguments recognize that debt incurs a fixed cost of capital, while equity costs vary with risk. That is, use of equity levies a premium for riskier investments, but debt costs are largely fixed prior to investment decisions. Thus, once debt is arranged, there is no cost penalty for taking riskier investments. Furthermore, highly leveraged firms limit the exposure to loss for equity owners. This suggests that owners may encourage agents to take riskier investments when using debt financing. Empirical evidence supports this argument. Lev (1974) found that highly leveraged firms tended to exhibit greater stock return variance, and Saunders, Strock, and Travlos (1990) and others (Catanach & Brody, 1993; Sinkey & Greenawalt, 1991) have also found that financial leverage is positively associated with market risk. Building on these results, we predicted that firm leverage would increase both credit and interest-rate risk.

> *Hypothesis 4a. Leverage in one year exhibits a positive influence on realized credit risk in the subsequent year.*
>
> *Hypothesis 4b. Leverage in one year exhibits a positive influence on realized interest-rate risk in the subsequent year.*

Regulatory supervision provides a third test of agency theory influences on risk behavior. In some industries, regulatory supervision may substitute for ownership control, especially when regulation prescribes limits on strategic and operational choices (Hillman, Cannella, & Paetzold, 1996). During the 1980s, regulatory agencies sought to constrain excessive risk taking on the part of S&Ls prompted by the presence of deposit insurance provided by the Federal Savings and Loan Insurance Corporation (FSLIC). Deposit insurance protected depositors up to a prescribed limit against losses incurred by S&Ls engaging in risky activities. Since the cost of this insurance to S&Ls was fixed and did not reflect the true risk of potential S&L failure, the insurance acted in much the same way as leverage in influencing risk choice. Hence, S&L managers were encouraged to pursue riskier strategies in the hopes of reaping major returns for shareholders, since firms could keep the gains of risk while the government insured them against its downside effects. The government used regulatory supervision to control high-risk strategies (White, 1991). Where regulatory supervision was lax, S&Ls could pursue riskier strategies. Agency theory implies that where control by principals is lax, agents will pursue self-interest. In this industry, self-interest manifested itself through the use of deposit insurance protection to pursue risk strategies that could result in windfall gains for a firm. Thus, lax regulatory supervision allowed S&L managers to pursue risks that provided them with opportunities to reap windfall gains while avoiding the downside effects of these risks through the presence of deposit insurance. Therefore, consistent with agency theory, we predicted that S&Ls would exhibit higher credit and interest-rate risk where regulatory oversight was lax.

Hypothesis 5a. Lax regulatory supervision exhibits a positive influence on realized credit risk in the same year.

Hypothesis 5b. Lax regulatory supervision exhibits a positive influence on realized interest-rate risk in the same year.

We also expect differences between federal and state regulation of investments. In the financial services industry, as in other industries (e.g., utilities, telecommunications, broadcasting), both federal and state regulations limit strategic and operational choices concerning products, markets, pricing, and more. During the period of this investigation, federal investment regulations were more restrictive than those of many states (White, 1991). Less restrictive state regulations allowed state-chartered firms to pursue riskier strategies. Again, assuming that regulatory control over operational policy choices substitutes for owner monitoring, agency theorists would argue that absent control, agents (S&L managers) will pursue self-interest. In this case, self-interest corresponds to accepting higher risk since their firms retain the benefits, and the costs are born by a third party (i.e., the FSLIC). Hence, we again expected credit and interest-rate risk to be greater among state-chartered S&Ls than among federally chartered thrifts.

Hypothesis 6a. State-chartered firms exhibit greater realized credit risk than federally chartered firms.

Hypothesis 6b. State-chartered firms exhibit greater realized interest-rate risk than federally chartered firms.

Both the credit and interest-rate risk models include control variables for market, economic, and firm effects. These control variables are a lagged measure of market rivalry, statewide annual unemployment, an annual measure of inflation, a contemporaneous measure of firm size, and time. Prior studies using firm-level measures of risk have found that market rivalry influences firm risk and performance (Cool, Dierickx, & Jemison, 1989; Woo, 1987). These studies suggest that highly competitive markets encourage decision makers to take more risks, to meet the challenges of increasing rivalry. We included the statewide unemployment rate and the regional consumer price index to control for local economic conditions and inflationary factors that could affect the realization of risk independent of policy choices. Firm size controls for possible scale economies (Haveman, 1993). We included time in the model to capture possible trend effects in the dependent variable.

Risk Influences on Risk

This study extends prior risk research by examining how some types of operational risk may influence other risks. Building more from observed empirical regularities than from theory, we argue that rising realized credit and interest-rate risks increase a firm's liquidity risk. For example, accepting risky investments ultimately can increase a firm's liquidity risk if those investments do not provide adequate returns to cover the cost of underlying

debt. In the S&L industry, increasing credit risk by relaxing credit standards can increase liquidity risk, since accepting riskier loans (i.e., riskier assets) raises collection costs, increases the risk associated with future cash flows, and ultimately reduces the value of the asset portfolio. Lower asset values limit a firm's ability to meet its debt obligations since devalued assets provide less cash with which those obligations can be met and may even result in liquidation costs. Thus, increases in realized credit risk (i.e., investment default) should correspond to increased liquidity risk.

Hypothesis 7a. Realized credit risk exhibits a positive influence on liquidity risk in the same year.

Similarly, market cycle risks can increase liquidity risk when down cycles reduce the value of inventories relative to short-term obligations. Firms that engage in international trade often experience declines in their asset values when their overseas contracts are executed in foreign currencies whose values fluctuate. Similarly, the asset values of domestic food products companies may be volatile as they are subject to commodity price changes in the futures markets. In the S&L industry, interest-rate risk parallels this risk and results when an inflationary (rising interest rate) environment reduces asset values. This reduction occurs because the market demands higher returns than those offered by the specific asset. To meet current obligations, a firm could be forced to sell assets at a loss, thus raising liquidity risk. Consequently, we predicted that interest-rate risk would increase liquidity risk:

Hypothesis 7b. Realized interest-rate risk exhibits a positive influence on liquidity risk in the same year.

We included time in the liquidity risk model to control for possible trend effects.

Risk Influences on Performance

Although it seems clear that managerial risk preferences should influence firm performance (Aaker & Jacobson, 1987; Lev, 1974), the nature of that influence is not apparent. Consistent with finance theory, agency scholars have argued that managerial risk aversion results in suboptimal performance and therefore represents an agency cost (Jensen, 1986; Hoskisson et al., 1992). Greenhalgh (1983) suggested a similar conclusion, proposing a positive link between the search for new products, markets, or routines and subsequent performance. Others have also argued for a positive link between performance and innovation (Kanter, 1983), search behavior (Schön, 1971), and risk (Aaker & Jacobson, 1987). In contrast, several findings within the risk-return research stream argue for a negative association between risk and performance. In a study of risk taking among organizations in decline, Wiseman and Bromiley (1996) found that risk taking associated negatively with performance, which in turn associated positively with decline. Other examinations of organizational decline (D'Aveni, 1989; Hambrick & Schecter, 1983) suggest that both too much and too little risk taking contribute to

organizational decline. Bromiley (1991b) also found a negative association between risk and subsequent performance. He suggested that risk-seeking behavior involves the acceptance of investments whose risk is not fully compensated. Therefore, performance suffers under risk-seeking behavior. Wiseman and Bromiley (1996) also noted that declining firms may have exhausted positive net-present-value options, leaving only investment options of poor quality, or that managerial incompetence may account for the selection of investments whose risk is not fully compensated. Taken together, these findings generally suggest that risk exhibits a negative influence on performance.

We predicted that realized credit, interest-rate, and liquidity risks would all negatively influence subsequent performance. Increasing credit risk reflects choices regarding the quality of assets purchased and of the assets' probability of providing a positive return. Even though a risk premium is often added to compensate for the increased risk of such assets, these premiums may represent insufficient compensation if managers make erroneous initial assessments of an investment's risk or if unforeseen economic or regulatory changes affect a borrower's ability to repay. Therefore, we predicted that increases in realized credit risk would result in lower operating performance.

> *Hypothesis 8a. Realized credit risk in one year exhibits a negative influence on operating performance in the next year.*

Increasing interest-rate risk also should harm performance. Interest-rate risk results from the mismatching of interest-earning assets with interest-costing liabilities. Funding long-lived assets such as 30-year, fixed-rate mortgages with deposits that pay short-term, variable market rates increases exposure to interest-rate risk. When this mismatching occurs and market interest rates increase, the margin between the interest earned and interest expenses declines, as does operating performance.

> *Hypothesis 8b. Realized interest-rate risk in one year exhibits a negative influence on operating performance in the next year.*

Finally, liquidity risk also harms performance (Hambrick & D'Aveni, 1988). Liquidity risk obtains when managers do not maintain sufficient liquid assets to cover short-term call obligations. This situation frequently occurs when firms convert liquid assets into less liquid assets that promise higher returns. Realization of liquidity risk occurs when firms are forced to incur costs (e.g., sell assets at a loss) for converting less liquid assets, such as inventory or long-term investments, into cash in order to satisfy immediate obligations. Thus, liquidity risk also can negatively affect performance.

> *Hypothesis 8c. Liquidity risk realized in one year exhibits a negative influence on operating performance in the next year.*

In the study's performance model we controlled for local industry conditions by including average firm performance calculated across all firms in the same state. This measure was expected to exhibit a positive relation to firm performance. We included time in the model to control for possible serial correlation in the data.

METHODS

Data

Data for this study came from the Department of Labor Statistics and from Thrift Financial Reports collected and reported by the Federal Home Loan Bank Board (FHLBB) from 1979 through 1988. The Labor Department data used include the annual regional consumer price index (CPI) and the annual statewide unemployment rate. Thrift Financial Reports contain detailed financial data submitted to the FHLBB by virtually all S&Ls in the United States. The FHLBB collected monthly balance sheet and income statement data for each of the ten years studied. The data were reported semiannually through 1983 and quarterly thereafter. Data from all branches of a single institution are combined in Thrift Financial Reports, which are therefore a source of parent-level financial information, not branch-level data. We standardized all data prior to estimating effects. Doing this allowed interpretation of effect sizes and eliminated significant differences in the magnitude of variables that could influence parameter estimates (Judge et al., 1988).

Sample

The population of firms for the period of this investigation ranges from 3,544 in the 1979–80 period to 2,586 in the 1986–88 period. Although consolidation is evident, performance gains during the period studied suggest an industry in resurgence. Because of failures and mergers, not all firms are represented in all years. The sample includes both federal and state and mutual and stock-chartered S&Ls from across the United States. We kept firms in the sample in all the years they filed Thrift Financial Reports with the FHLBB regardless of their eventual fate. Outliers beyond four standard deviations (approximately 1.3 percent of the original data) were removed from the sample. Eliminating outliers avoided the possibility that a small number of extreme values would overly influence the results. The final sample used in estimating the model comprised 23,159 firm-period observations. We then divided this sample into a regulated period sample containing 12,320 firm-year observations and a deregulated period sample containing 10,839 firm-year observations. Table 1 provides a correlation matrix and sample statistics for the combined data used in this study.

Measurement

Measures were taken from Thrift Financial Reports and Labor Department data. We carefully selected them to focus on actual firm operations and

TABLE 1
Means, Standard Deviations, and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Realized credit risk	9.97	28.05															
2. Realized interest-rate risk	16.59	21.31	.08**														
3. Liquidity risk	174.11	17.35	−.01	.28**													
4. Operating performance	−0.28	13.70	−.20**	−.22**	−.17**												
5. Performance context	0.00	0.01	−.12**	−.14**	−.13**	.19**											
6. Recoverable slack squared	177.40	428.90	.05**	−.02**	−.04**	.01	.05**										
7. Stock ownership	0.22	0.41	.14**	.12**	.05**	−.12**	.07**	.18**									
8. Leverage	95.31	3.42	.18**	.27**	.13**	−.15**	−.38**	−.17**	−.04**								
9. Lax regulatory supervision	0.49	0.50	.09**	−.01	.05**	−.08**	.03**	−.01	.15**	.06**							
10. State regulation	0.46	0.50	.04**	−.06**	−.02**	−.03**	.05**	.10**	.35**	−.11**	.01**						
11. Market rivalry	15.43	13.47	.06**	.19**	.01	.05**	.02**	.03**	.01	.07**	−.13**	−.14**					
12. Unemployment rate	7.86	2.21	.04**	−.11**	−.02**	.10**	−.01	−.01	−.11**	.10**	−.15**	−.02**	−.08**				
13. Consumer price index	99.81	10.39	.11**	−.09**	−.10**	.16**	−.04**	.02	.07**	.03**	−.02**	−.06**	.04**	−.17**			
14. Logarithm of assets	11.27	1.32	.08**	.36**	.15**	−.04**	−.07**	−.19**	.02**	.27**	−.04**	−.16**	.09**	−.04**	.09**		
15. Time	84.31	2.32	.24**	−.11**	−.23**	.32**	.06**	.07**	.03**	.16**	−.01	−.01	.14**	.11**	.37**	.18**	
16. Average in-state performance	−0.96	7.31	−.15**	−.12**	−.14**	.43**	−.04**	−.03**	−.24**	.07**	−.20**	−.09**	.10**	.18**	.23**	.02**	.45**

[a] $N = 23,159$.

** $p < .01$

avoided measures that might be prone to manipulation (Elitzur & Yaari, 1995). For example, the ratios used in this study are based on generally accepted accounting principles (GAAP) to the greatest extent possible. Measures of risk and performance also reflect industry practices and reporting norms (Sheshunoff Information Services, 1990) and therefore represent the information that thrift managers normally use in making decisions (Verbrugge & Goldstein, 1981). We standardized all variables to enhance the interpretability of the research results.

Risk. A significant contribution of this study is the simultaneous modeling of specific, realized, operational-level downside risks. To achieve this end, we examined three risks common to the financial services industry that parallel similar risks in nonfinancial service firms: realized credit risk, realized interest-rate risk, and realized liquidity risk (Barth, Brumbaugh, Sauerhaft, & Wang, 1989; Sinkey & Greenawalt, 1991). By focusing on the *realized* risks of a firm, this study adopts a notion of risk that focuses on downside outcomes. Such a perspective is consistent with that of March and Shapira (1987), who suggested that most managers do not treat uncertainty about positive outcomes as an important aspect of risk, but instead focus on failure to meet targets (Mao, 1970), or on downside risk (Collins & Ruefli, 1995; Miller & Leiblein, 1996). Although possibilities of gain are important to decision makers when they assess the attractiveness of alternatives, risk is seen as associated with the potential negative outcomes (Baird & Thomas, 1990; MacCrimmon & Wehrung, 1986). Furthermore, the use of realized risks provides insight into managerial competence in achieving portfolio diversification to mitigate credit risk and in implementing hedging strategies to minimize a firm's exposure to interest-rate risk.

The three realized risks modeled here correspond to discrete operational polices concerning (1) the degree of risk that is acceptable when extending credit, (2) the degree of risk that is acceptable in matching the risk of a portfolio of earning assets (e.g., loans and investment securities) to the risk of a portfolio of costing liabilities (e.g., deposits), (3) and the degree of risk that is acceptable in meeting current obligations. Both realized credit risk and realized interest-rate risk are managed directly and reported regularly in publicly available industry analyses (e.g., Sheshunoff Information Services, 1990). Hence, our measures provide reasonable proxies for specific operational risk policies.

This study's measure of realized credit risk was the ratio of real estate owned to total mortgage loans held. We used this measure because it indicates the amount of foreclosed real estate an institution has recorded for nonperforming borrowers (Bulmash & Maherz, 1985; O'Hara, 1981; Rudolph & Hamdan, 1988). Relaxing credit standards or poor underwriting can result in higher incidences of loan foreclosure and ultimately increases the amount of repossessed real estate held by an S&L.

Following previous studies, this study measured realized interest-rate

risk as an institution's cost of district Federal Home Loan Bank (FHLB)[1] advances (Barth et al., 1989). Conventional deposits from local markets represent a financial institution's primary source of financing, but savings and loan institutions frequently rely on FHLB advances to meet operating expenses, lending commitments, and deposit withdrawal requests. This source is primarily a short-term one and is sensitive to interest-rate changes. Therefore, the use of such financing increases an institution's interest-rate risk.

Following prior research, we measured realized liquidity risk as the ratio of liquid assets to total assets (Barth et al., 1989; Hadaway, 1985; Hambrick & D'Aveni, 1988; Rudolph & Hamdan, 1988).

Firm Performance. Firm performance was captured through operating cash flow, which is measured as the ratio of operating cash flows to total assets. This measure is less susceptible to manager manipulation than return on assets (ROA) and is insensitive to the accounting principles or reporting rules adopted by a firm. Thus, this measure more closely reflects the *actual* operating performance of a firm than ROA (Catanach, 1994).

Performance context. ROA was used to calculate a firm's performance context since managers and others (e.g., Sheshunoff Information Services, 1990) commonly use this measure to assess relative performance (Hadaway, 1985; Kohers & Simpson, 1984; O'Hara, 1981; Reger, Duhaime, & Stimpert, 1992; Verbrugge & Goldstein, 1981). Performance context was measured as the difference between an S&L's ROA and the average ROA of S&Ls located in the same state, with both measured in the same year. Research evidence suggests that average industry performance adequately captures the performance referent. Studies by Frecka and Lee (1983) and by Lev (1969) indicate that firms tend to adjust their performance to the industry average. Additionally, Gooding, Goel, and Wiseman (1996) and Wiseman and Bromiley (1991) suggested that industry average and industry median performance both provide reasonable proxies for the performance referent in models of risk and return. In this study, we calculated the performance context using a statewide average since the performance data firms use when making performance comparisons are published by states using state-level data (cf. Sheshunoff Information Services, 1990).

Recoverable slack. Slack refers to the excess resources available to a firm (Bourgeois, 1981; Cyert & March, 1992; Meyer, 1982). Although a variety of forms of slack have been suggested (Bourgeois, 1981; Singh, 1986), only recoverable slack exhibits discriminant validity when compared to leverage and liquidity. Recoverable slack is comparable to the available slack construct used by Singh (1986), since both use the same measures. Following prior research, we measured slack as the ratio of general and administrative overhead expenses to total assets. This ratio is squared in the model since

[1] Each of the 12 FHLBB regulatory districts contained a FHLB bank. These banks were established to use their government affiliation to borrow money in the national credit markets and then lend this money at favorable rates to member S&Ls.

our prediction is for a fully convex relation whereby high and low levels of slack correspond to high risk, and moderate levels of slack correspond to low risk.

Stock ownership. S&L are chartered as either mutual or stock institutions. This study modeled these two forms of ownership using a dummy variable that is coded 1 for stockholder-controlled S&Ls and 0 for mutual, depositor-owned institutions. Parameter estimates associated with this dummy variable indicate how realized credit and interest-rate risks in stock S&Ls differ from those in mutual firms.

Leverage. Leverage represents a firm's amount of debt financing relative to its equity financing. Previous studies in the S&L industry have measured leverage using ratios of net worth to assets or liabilities or of debt to assets (Catanach & Brody, 1993; Hadaway, 1985; Kohers & Simpson, 1984; O'Hara, 1981). Consistent with this research, this study measured leverage using a ratio of total liabilities to estimated tangible GAAP assets.

Regulatory supervision. Using a dummy variable coding scheme, regulatory supervision captures those FHLB districts in which supervision was lax during the period examined. Four FHLB districts (districts 4, 7, 9, and 10) have been independently identified (Barth, Bartholomew, & Labich, 1990; Strunk & Case, 1988) as having had less supervisory control over S&Ls during the 1980s than other districts did. The presence of higher closure costs in these districts supports this view (Barth, Bartholomew, & Bradley, 1989), since closure costs are related to the diligence of regulators in constraining activities that can exacerbate downside risk. We verified the selection of the four lax districts by comparing the 12 districts one by one (again using dummy variables) to the district exhibiting the lowest average realized risks. This analysis confirmed that only the four districts previously identified as having lax control produced significant departures from the focal low-risk district. Consequently, this study uses a dummy variable set to 1 for FHLB districts 4, 7, 9, and 10 and to 0 otherwise.

State regulation. S&Ls may also be chartered through federal or state regulatory offices. The type of governmental charter a firm holds can affect the nature of its operating activities as well as the assets in which it invests. During the period of this study, state-chartered institutions generally enjoyed more liberal limits on their investment powers than federal S&Ls (White, 1991). Consequently, we modeled investment regulation using a dummy variable coded 1 for state S&Ls and 0 for federal S&Ls.

Market rivalry. Rivalry represents the intensity of competition facing an S&L. This study used the inverse of industry consolidation within the local market as a measure of this competition (Cool et al., 1989; Kohers & Simpson, 1984; O'Hara, 1981; Woo, 1987). Following the industry's primary source of data on firm and market performance (Sheshunoff Information Services), we defined markets by firms' home states. This practice is reasonable since interstate branching was prohibited during much of the period studied and, when allowed, usually involved only a handful of very large S&Ls engaging in the acquisition of financially distressed institutions. Ad-

ditionally, liberal within-state branching and lending laws allowed S&Ls to compete statewide regardless of charter.

We measured industry consolidation using an adjusted Herfindahl index computed with total deposits (Cool et al., 1989). The calculation of this index included only competitors of a firm located within its home state and specifically excluded the firm's own market share from the computation. This procedure guards against multicollinearity problems arising when a firm's market share is included (a problem exacerbated by highly concentrated markets). Since a high value indicates strong market consolidation, the inverse of this measure captures market rivalry, so that a high value corresponds to intense rivalry.

Other control variables. Five common control variables were also used in this study: unemployment rate, regional CPI (consumer price index), firm size, time, and state mean performance. We took annual statewide unemployment rates and regional CPI measures directly from Labor Department data. Size was captured as the logarithm of total assets. Time was the year in which operating performance was measured. Average in-state performance was the average ROA across all S&Ls in each S&L's home state.

Estimation Procedures

This study used a two-stage least squares approach to estimate a four-equation simultaneous model in testing the relationships suggested by Hypotheses 1a through 8c. The model covers a three-year period, with firm and industry factors captured in year one modeled on operational risks (credit and interest rate risks) in year two, which were in turn modeled on liquidity risk in the same year. All three risks were then modeled on performance in the third year. Lagging response variables in this way satisfies a necessary condition of causality. We examined the lag structure of the model to determine if an alternative lag structure for the explanatory variables would provide a superior fit to the data. Results from a polynomially distributed lag regression based on an Almon lag function (SAS Institute, 1988) supported our use of single-period lags. No alternative lag structure provided a better-fitting model.

To examine the effects of deregulation on the predicted relations, we divided the data into two samples representing the regulated and deregulated environments. The regulated samples included data from four 3-year periods beginning with 1979–81 and ending with 1982–84. The deregulated sample included the four 3-year periods beginning with 1983–85 and ending with 1986–88. We selected the 1983–85 period to divide the two regulatory regimes because of the timing of the enactment and implementation of the two federal regulatory acts affecting the thrift industry at this time, the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) and Garn–St. Germain. Full implementation of these acts did not begin until 1983. To test this assumption, we also estimated the model on each of the eight 3-year periods separately and compared individual period results to the longitudinal results from each regulatory sample. Single-period results

from periods prior to 1983–85 correspond to the regulated sample's longitudinal results, and single-period results from 1983–85 and later periods correspond to the deregulated longitudinal results.

Each sample contains four periods of data, so the model is estimated on two pooled data sets. Since pooling data across time raises issues of serially correlated error terms (Judge, Griffiths, Lutkepohl, & Lee, 1988; Kmenta, 1986); each equation included a measure of time intended to control for autocorrelation. Additionally, for each equation, we calculated a first-order autocorrelation term (rho), computed Durbin-Watson statistics, and examined residuals using an autoregressive integrated moving average (ARIMA) procedure. Although the Durbin-Watson tests proved inconclusive, all the other tests for serial correlation indicated that our results were not adversely affected by serially correlated errors.

RESULTS

Credit, Interest-Rate, and Liquidity Risk Models

Table 2 displays results for realized credit risk. As Hypothesis 1a predicts, performance context exhibited a negative influence on credit risk in both regulatory environments; however, this influence was significant only in the deregulated environment. The absence of influence prior to deregulation may have occurred because regulatory controls severely restricted credit policy options in the regulated environment. These results indicate that performance context provides an important explanation of risk when choices of risk are allowed, even after agency and environmental influences are controlled for. Recoverable slack squared exhibited a positive and significant influence on realized credit. These results fully support Hypothesis 2a: both high and low levels of slack lead to higher levels of operational risk, and moderate slack corresponds to a lower risk profile. Stock-owned firms, leverage, and state regulation each exhibited higher realized credit risk in both regulatory environments. These findings are consistent with Hypotheses 3a, 4a, and 6a. Hence, agency influences appear to provide important explanations of credit risk under both regulatory conditions. The mixed influence of regulatory supervision on realized credit risk (it has a negative relation prior to deregulation and a positive relation after deregulation) suggests that oversight didn't decline until after deregulation occurred. This interpretation coincides with the transfer of examination responsibility from the FHLBB to FHLB District Banks on July 6, 1985 (Strunk & Case, 1988). As expected, market rivalry and unemployment each had a strong positive influence on realized credit risk. Meanwhile, the CPI, size, and time had positive influences only in the deregulated environment. The mixed results for the CPI and time may be due to collinearity between time and the CPI (r = .37). Not surprisingly, the results from the deregulated sample provide a stronger explanation of realized credit risk than those from the regulated sample. Clearly, regulatory control limited the management of this risk and

TABLE 2
Model of Realized Credit Risk[a]

Variable	Regulated	Deregulated	Hypothesis and Predicted Sign
Intercept	−0.10***	−0.45**	
	(.01)	(.03)	
Performance context	−0.00	−0.15***	H1a −
	(.00)	(.01)	H2a +
Recoverable slack	0.02***	0.03**	H3a +
squared	(.00)	(.01)	H4a +
Stock ownership	0.03***	0.19***	H5a +
	(.00)	(.01)	H6a +
Leverage	0.04***	0.16***	
	(.00)	(.01)	
Lax regulatory	−0.02**	0.33***	
supervision	(.01)	(.02)	
State regulation	0.01	0.04***	
	(.00)	(.01)	
Market rivalry	0.02***	0.08***	
	(.00)	(.01)	
Unemployment rate	0.01***	0.15***	
	(.00)	(.01)	
Consumer price index	0.00	0.25*	
	(.00)	(.12)	
Logarithm of assets	0.00	0.01	
	(.00)	(.01)	
Time	0.08***	0.30***	
	(.01)	(.08)	
Adjusted R^2	.06***	.14***	
Rho	.03	.14	
df	12,308	10,827	
Durbin-Watson	1.93	1.72	

[a] Standard errors appear in parentheses.
* $p < .05$
** $p < .01$
*** $p < .001$

thus attenuated the influence of theoretical predictions. Removing regulatory controls released the predictive power of prospect and agency theories.

Table 3 displays the results for realized interest-rate risk. In support of Hypothesis 1b, performance context exhibited a negative influence on realized interest-rate risk, although this coefficient is significant only in the regulated environment. These results provide partial support for a hunger-driven view and argue for the presence of performance context influences even after agency effects are controlled for. That is, firms falling behind the performance of rivals took more risks, but above-average performers became increasingly risk averse. Consistent with Hypothesis 2b, recoverable slack squared exhibited a positive, significant influence on interest-rate risk in both regulatory environments: both very low and very high levels of slack

TABLE 3
Model of Realized Interest-Rate Risk[a]

Variable	Regulated	Deregulated	Hypothesis and Predicted Sign
Intercept	0.08***	−0.20***	
	(.02)	(.02)	
Performance context	−0.11***	−0.01	H1b −
	(.01)	(.01)	H2b +
Recoverable slack	0.12***	0.05***	H3b +
squared	(.01)	(.01)	H4b +
Stock ownership	0.12***	0.12***	H5b +
	(.01)	(.01)	H6b +
Leverage	0.28***	0.19***	
	(.01)	(.01)	
Lax regulatory	−0.08***	−0.01	
supervision	(.02)	(.02)	
State regulation	0.01	−0.03***	
	(.01)	(.01)	
Market rivalry	0.18***	0.15***	
	(.01)	(.01)	
Unemployment rate	−0.11***	−0.04***	
	(.01)	(.01)	
Consumer price index	−0.08***	−0.38***	
	(.01)	(.09)	
Logarithm of assets	0.38***	0.30***	
	(.01)	(.01)	
Time	−0.20***	0.18***	
	(.02)	(.07)	
Adjusted R^2	.28***	.25***	
Rho	.10	.05	
df	12,308	10,827	
Durbin-Watson	1.80	1.90	

[a] Standard errors appear in parentheses.
* $p < .05$
** $p < .01$
*** $p < .001$

correspond to increased realized interest-rate risk. In support of agency influences, S&Ls using a stock ownership structure and those with higher leverage had greater interest-rate risk. These results support Hypotheses 3b and 4b. Interestingly, lax regulatory supervision exhibited a negative influence on realized interest-rate risk prior to deregulation. Hypothesis 5b is not supported. In a test of Hypothesis 6b, state-chartered firms exhibited less interest-rate risk in the deregulated environment. Comparing this finding to the positive influence state regulation had on credit risk suggests that state-chartered S&Ls may have hedged excessive credit risk with lowered interest-rate risk following deregulation. Next, both unemployment and the CPI exhibited significant, negative influences on interest-rate risk, and size exhibited a positive influence. Finally, the fact that the interest-rate risk models

are stronger than the credit-risk models is most likely due to the greater discretion S&Ls enjoyed in managing interest-rate risk relative to that of managing credit risk during this period (a disparity in discretion that was only partly alleviated by the advent of deregulation).

Table 4 presents results for realized liquidity risk. Curiously, credit risk exhibited a large negative influence on liquidity risk prior to deregulation and a small positive influence following deregulation. Meanwhile, interest-rate risk exhibited a positive influence in both environments. These results provide partial support for Hypotheses 7a and 7b. The difference between credit and interest-rate risk influences on liquidity risk prior to deregulation suggests hedging behavior. That is, firms compensated for excessive risk (risk that threatened solvency) in one area by reducing risk in another. For example, prior to deregulation, managers may have hedged against excessive interest-rate risk (which was due to inflation) by taking on less credit risk. After deregulation, lower inflation and relaxed regulatory control over credit-risk policy may have encouraged S&Ls to take on more credit risk. In total, these results suggest that firms treat risks differently and may determine each risk separately. Finally, time exhibited a negative influence, indicating that liquidity risk generally declined under both regulatory regimes.

Performance Model

Table 5 presents results for firm performance. Consistent with Hypothesis 8a, realized credit risk exhibited a negative influence on operating performance. However, realized interest-rate risk displayed a positive influence prior to deregulation and a negative influence following deregulation. Fi-

TABLE 4
Model of Realized Liquidity Risk[a]

Variable	Regulated	Deregulated	Hypothesis and Predicted Sign
Intercept	−0.34***	0.62***	
	(.02)	(.02)	
Credit risk	−1.39***	0.11***	H7a +
	(.18)	(.02)	
Interest-rate risk	0.45***	0.44***	H7b +
	(.02)	(.02)	
Time	−0.16***	−0.75***	
	(.03)	(.02)	
Adjusted R^2	.09***	.15***	
Rho	.05	.13	
df	12,316	10,835	
Durbin-Watson	1.90	1.75	

[a] Standard errors appear in parentheses.
* $p < .05$
** $p < .01$
*** $p < .001$

TABLE 5
Model of Operating Performance[a]

Variable	Regulated	Deregulated	Hypothesis
Intercept	−0.42***	−0.01	
	(.04)	(.04)	
Credit risk	−2.34***	−0.66***	H8a −
	(.28)	(.04)	
Interest-rate risk	0.22***	−0.25***	H8b −
	(.04)	(.03)	
Liquidity risk	−1.11***	0.20***	H8c −
	(.08)	(.05)	
Average in-state performance	0.37***	0.09***	
	(.02)	(.01)	
Time	0.04	0.39***	
	(.04)	(.04)	
Adjusted R^2	.10***	.15***	
Rho	.03	.05	
df	12,314	10,833	
Durbin-Watson	1.94	1.89	

[a] Standard errors appear in parentheses.
* $p < .05$
** $p < .01$
*** $p < .001$

nally, realized liquidity risk exhibited a strong negative influence on performance prior to deregulation and a positive influence afterward. These results provide partial support for Hypotheses 8b and 8c. The mixed findings across regulatory regimes and across types of risk argue for a more complex picture of risk than has been developed in prior risk-return studies. For example, the magnitudes of the different risk influences on performance vary across the type of risk: realized credit risk has the strongest influence in both regimes, but liquidity risk only exhibits a strong influence in the regulated environment. Differences in the size of influence across these realized operational risks indicate that some downside risks have a greater impact on performance than others and support the call for disaggregating risk influences on performance. Further, it is interesting to note that changes in realized risk exhibit a greater impact on performance in the regulated environment, suggesting that small changes in risk had a large impact on performance when options for managing risk were limited. Finally, both time and average in-state performance exhibited positive influences on performance, although time was not significant prior to deregulation.

DISCUSSION

This study shows that both prospect and agency theories provide distinct yet compatible explanations for observed operational risks. Consequently, the results argue for a mesotheoretic approach that combines agency

and prospect theory explanations into a single model of risk-taking behavior (Tosi, 1992). Second, these findings suggest that organization-level measures of risk may mask important dynamics that occur in the selection of risk. In particular, we found that organizational and environmental factors did not exhibit uniform influence across different operational risks: realized credit and interest-rate risks had different influences on liquidity risk, and all three realized risks exhibited different and varied influences on firm performance. Therefore, future researchers addressing risk should consider disaggregating organizational risk into distinct operational risks, since it appears that different operational risks exhibit different relations with firm and industry factors, as well as with performance. Third, evidence presented here suggests that both market and regulatory influences also may contribute to explanations of risk choice. Fourth, regulatory control may play multiple roles in the choice of risk. In one role, it may restrict risk management by limiting policy options to specific types of risk. In another role, regulatory oversight may substitute for corporate governance in controlling excessive risk taking within prescribed options. Finally, this study indicates that conceptual differences between slack and risk may be obscured by the level of measurement used.

Integrating Prospect and Agency Views of Risk

Results from this study demonstrate that behavioral views, such as prospect theory and the behavioral theory of the firm, continue to explain risk-taking behavior even after agency-based influences are controlled for. These findings challenge arguments that behavioral influences are masking underlying agency effects (Machina, 1983) and instead argue for blending behavioral models with agency-based views to obtain more complete explanations of risk preferences and risk-taking behavior (Gomez-Mejia, 1994). For example, behavioral theory may inform governance research, particularly compensation research. Compensation studies appear to suffer from an overreliance on financial theory (Gomez-Mejia, 1994) and generally ignore behavioral processes in predicting executive behavior. A first step toward synthesis would be to substitute "loss aversion" (Tversky & Kahneman, 1991) for "risk aversion" in agency-based models of executive compensation and behavior. If avoiding loss outweighs accruing gain as a factor shaping executive risk preferences, there are implications for variable pay design. Building on an assumption of loss aversion (as opposed to risk aversion), we could argue that executives are more concerned about threats to future base pay (e.g., employment risk) than about the uncertainty of contingent pay (Wiseman & Gomez-Mejia, 1998). This argument opens an entirely new perspective on the role of variable pay in controlling risk aversion by suggesting that the risk properties of variable pay may have an influence on agent behavior that is the opposite of what some have previously argued (e.g., Amihud & Lev, 1981; Walsh & Seward, 1990). In particular, it may be that compensation risk is less important to agents' risk bearing than the

possible employment risk they incur from pursuit of variable pay (Wiseman & Gomez-Mejia, 1998).

Conversely, agency theory may contribute to behavioral explanations of risk. If a performance referent such as aspirations plays a key role in distinguishing between gain and loss performance contexts (Lant, 1992; March & Shapira, 1992), then it would seem that governance design, especially the performance targets used in awarding variable pay, should play a role in determining that referent. This argues against measuring performance context at the level of the firm (as has been done in virtually all previous risk research, including this study) and argues for capturing it through executive compensation design. This approach would be more consistent with Kahneman and Tversky's (1979) original notion of a performance context since it reflects changes to personal wealth. Ultimately, it would seem that a blending of prospect and agency views in models of compensation design and of risk may enhance scholars' general understanding of risk-taking behavior.

Multiple Risks

Our results suggest that risk should not be viewed as a single construct (Miller & Bromiley, 1990). Firm risk represents a variety of policy choices made separately in response to various firm and industry factors that have differential effects on firm performance and, presumably, firm survival (Reger et al., 1992). This study captured three types of risk: the realized downside risk associated with asset quality (credit risk), the realized downside risk associated with pricing decisions (interest-rate risk), and the realized risk associated with insolvency (liquidity risk). Although our selection of operational risks was driven largely by the norms of the industry studied, the three risks modeled here may generalize to other industries and may provide a basis for refining the future identification and measurement of firms' operating risks. Specifically, future research may wish to consider how firms manage asset or investment risk, pricing or profit margin risk, and solvency risk.

The findings of this study clearly indicate that firms manage different risks separately and opt for different risk postures across these risks over time, suggesting a more complex picture of risk than has emerged from prior risk-return research. The results indicate that risk preferences differ across the type of risk and suggest that preferences for one risk may hold implications for preferences of other risks. Therefore, characterizing risk as a uniform construct reflecting an overall risk propensity through organization-level measures seems to ignore specific behaviors and the dynamic nature of risk choice. Furthermore, accepting multiple operational risks (and even strategic risks) challenges research that views separate choices (e.g., R&D investment, capital investment, and diversification) as indicators of a single underlying risk preference. This study suggests that these choices are independent but may interact if firms hedge by using one risk to balance another. This view allows for a variety of relations among different risk choices, so

that preferences for high and low risk could occur simultaneously. For example, firms could increase risk through R&D investment while simultaneously lowering risk through diversification.

Future research also should investigate the manner in which different risk choices are combined. For example, are different operational risks viewed as substitutes, complements, or independent choices? This question has implications for whether firm-level measures of risk accurately represent risk preferences. Do executives manage a firm's net risk directly through some form of mental accounting that combines individual strategic or operational risks into a single portfolio, or do they view risk choices sequentially and independently (Simon, 1947)? Some evidence suggests that mental accounting of risk may be context driven (Thaler, 1985); decision makers may not combine all individual risk choices into a net risk, but may view them in isolation. If true, this argues against measuring risk at the organization level since doing so may mask important behavioral or cognitive processes executives use in managing different risks. Conversely, even if executives manage risk as a portfolio, it isn't clear that a single firm-level "average" risk measure reflects specific risk preferences. Executives may weight risks differently, and risk preferences for some risks may have consequences for other risks not directly managed. To more fully understand managerial risk taking and its consequences for performance, strategy researchers need to evaluate specific operational or strategic risks.

The failure to disaggregate risk threatens understanding of how it influences performance. The results presented here suggest that different operational risks vary in their relation to performance in such a way that some risks harm performance while others do not seem to matter. Hence, it is not risk, but *which* risk, that matters. It is conceivable that some risks are necessary to firm performance and survival, while others should be minimized. It also is conceivable that risk's influence is nonlinear, and that very high or very low risk (Argenti, 1976) damages performance. How different operational risks combine, whether managers indeed manage different risks sequentially or as a portfolio (Bromiley, 1986), and how distinct risks influence performance all remain unclear.

Limitations and Extensions

Several limitations are inherent in this study. In particular, it focused on a single industry undergoing regulatory and performance changes. However, as demonstrated herein, single-industry studies provide unique opportunities for capturing the downside effects of specific operational risks and can serve to establish boundary conditions for theory development (cf. Montgomery & Wernerfelt, 1991). On the other hand, certain characteristics of this industry may limit the study's generalizability to other settings. Specifically, this industry, in which risk-taking behavior in the presence of moral hazard (i.e., some S&Ls pursued high-risk investments while the cost of insurance remained fixed) may be exaggerated, also experienced considerable consolidation and changing regulatory intervention.

To control for these characteristics, we modeled the degree of regulatory oversight, differences between regulating agencies (i.e., state versus federal) on operational risk, and changes in industry regulation. The strong influence of regulatory supervision argues that regulatory oversight may replace corporate governance in settings in which normal corporate governance control is limited and suggests that future corporate governance researchers consider the role of regulatory supervision in the absence of owner monitoring. This analysis extends agency views of corporate governance beyond the boundaries of ownership control and allows tests of agency issues in a broader set of industries. This study also modeled the effects of deregulation on risk and performance. Results indicate that relaxing regulatory control in the S&L industry allowed theoretical predictions of risk choice to materialize. Deregulation also had a different influence on the relation of risk to performance. By constraining certain risk options, regulatory control appeared to exaggerate the influence of some risks on performance, making the management of risk even more critical under the regulated environment. Since regulatory control of one sort or another is present in virtually all industries, this factor should receive more attention in the future.

By controlling for these influences, we found that as regulatory control and oversight relaxed, risk-taking behavior changed, a pattern supporting theoretical predictions while establishing a boundary condition for those predictions. Although the presence of deposit insurance may have exaggerated risk-taking behavior in this industry, results largely conform to predictions indicating that even in the presence of exaggerated risk propensity, prospect and agency predictions largely hold. Furthermore, these findings continue to be relevant to the banking and credit union industries, both of which continue to be supported by deposit insurance guarantees.

Industry performance changes also may limit generalizability. In particular, rising average performance combined with a declining industry population over the period suggests an industry undergoing significant restructuring. Therefore, our results may best reflect industries undergoing similar structural changes, such as those currently occurring in banking, utilities, and certain segments of the computer industry.

Another possible limitation may be our measure of performance context. In assessing performance context, we followed prior risk research in using a measure of average performance (measured separately for each state) as the referent for distinguishing between gain and loss contexts. This approach is robust (Miller & Leiblein, 1996; Wiseman & Bromiley, 1991), but it may not accurately reflect the true referent used by decision makers for framing problems such as gain or loss. Laboratory research has been successful (Lant, 1992) at capturing an "aspirational" referent, or in creating performance contexts (Sitkin & Weingart, 1995); field research has used proxies, such as measures of central tendency, that, although robust, have yet to be shown valid. As the results of this study suggest, future researchers should consider looking at compensation factors, especially the performance

targets used for awarding variable pay, as a means of capturing this construct. Alternatively, future research should discover exactly what information managers use in framing problems.

A final limitation concerns our measures of risk and slack. Our measures of leverage and liquidity risk are identical to measures of potential and available slack, respectively (e.g., Bromiley, 1991b). Although our measures of leverage and liquidity are consistent with both theory and industry practice (Sheshunoff Information Services, 1990), the duality of these measures as assessments of both risk and slack raises issues of construct validity and highlights deficiencies in the theory of slack. Consider leverage and potential slack. Both are argued to positively influence risk preferences. From an agency perspective, debt provides an incentive to pursue riskier investments, since the gains from these investments are not shared with the source of capital (Jensen & Meckling, 1976). Conversely, a hunger-driven slack argument assumes that a firm's health corresponds to its amount of slack, so that when debt capacity is exhausted (e.g., levels of debt are high), managers engage in a risk-laden search for ways of restoring firm health. The difference between these views hinges on whether leverage (or exhausted potential slack) provides an incentive or a threat. Separating these motives is necessary to building sound theories of slack and of risk.

Similarly, researchers must avoid confusing liquidity risk and available slack. Liquidity risk and available slack both have a buffering role (Cyert & March, 1992), with the presence of liquid assets beyond what is needed to cover current liabilities protecting a firm from insolvency (Lev, 1974). This observation would explain why firms in decline actively protect liquid assets during downward spirals (Hambrick & D'Aveni, 1988). The absence of liquidity becomes a form of risk to be managed. Thus, the difference between the risk and slack properties of liquidity may derive from its role in a model of risk. As a criterion, liquidity captures firm health characteristics that may drive risk preferences. As a response variable, liquidity clearly captures a measure of firm health that is impacted by those choices. Thus, it may be appropriate in future research to model liquidity as both an explanator of risk choices and an outcome of those choices.

In conclusion, this study suggests that future researchers addressing risk should (1) combine agency and behavioral decision theories in risk models since both are directly concerned with the selection of risk and would seem to have complementary influences on risk choice, (2) give preference to modeling specific operational or strategic risks over firm-level risk since different risk choices exhibit different relations to organizational and environmental factors and with firm performance, (3) give preference to downside risk measures over measures of uncertainty, (4) consider the dual roles that regulatory control may play in limiting risk choice while enhancing risk's impact on performance, and (5) re-examine the role of slack by recognizing the dual properties that some slack resources may have in risk models.

REFERENCES

Aaker, D. A., & Jacobson, R. 1987. The role of risk in explaining differences in profitability. ***Academy of Management Journal,*** 30: 277–296.

Amihud, Y, & Lev, B. 1981. Risk reduction as a managerial motive for conglomerate mergers. ***Bell Journal of Economics,*** 12: 605–617.

Argenti, J. 1976. ***Corporate collapse.*** New York: Halstead Press.

Baird, I. S., & Thomas, H. 1990. What is risk anyway?: Using and measuring risk in strategic management. In R. A. Bettis & H. Thomas (Eds.), ***Risk, strategy, and management:*** 21–52. Greenwich, CT: JAI Press.

Barnea, A., Haugen, R. A., & Senbert, L. W. 1985. ***Agency problems and financial contracting.*** Englewood Cliffs, NJ: Prentice-Hall.

Barth, J. R., Bartholomew, P. F., & Bradley, M. G. 1989. ***The determinants of thrift institution resolution costs.*** Research paper no. 89-03. Office of Thrift Supervision, Washington, DC.

Barth, J. R., Brumbaugh, J. R., Sauerhaft, D., & Wang, G. H. 1989. Thrift-institution failures: Estimating the regulator's closure rule. In G. G. Kaufman (Ed.), ***Research in financial services,*** vol. 1: 1–23. Greenwich, CT: JAI Press.

Barth, J. R., Bartholomew, P. F., & Labich, C. J. 1990. Moral hazard and the thrift crisis: An empirical analysis. ***Consumer Finance Law Quarterly Report,*** 44: 22–34.

Baysinger, B., & Hoskisson, R. E. 1990. The composition of boards of directors and strategic control: Effects on corporate strategy. ***Academy of Management Review,*** 15: 72–87

Benston, G. J. 1985. ***An analysis of the causes of savings and loan association failure.*** Monograph Series in Finance and Economics, Salomon Brothers Center for the Study of Financial Institutions, New York.

Bourgeois, L. J., III. 1981. On the measurement of organizational slack. ***Academy of Management Review,*** 6: 29–39.

Bowman, E. H. 1982. Risk seeking by troubled firms. ***Sloan Management Review,*** 23(4): 33–42.

Bromiley, P. 1986. ***Corporate capital investment, a behavioral approach.*** Cambridge: Cambridge University Press.

Bromiley, P. 1991a. Paradox or at least variance found: A comment on "mean-variance approaches to risk-return relationship in strategy: Paradox lost." ***Management Science,*** 37: 1206–1215.

Bromiley, P. 1991b. Testing a causal model of corporate risk taking and performance. ***Academy of Management Journal,*** 34: 37–59.

Bromiley, P., & Curley, S. P. 1992. Individual differences in risk taking. In J. F. Yates (Ed.), ***Risk-taking behavior:*** 87–132. New York: Wiley.

Bulmash, S. B. 1981. ***The principal-agent relations in a financial intermediary—A model explaining the behavior of mutual and stock savings and loan associations.*** Unpublished doctoral dissertation. Northwestern University, Evanston, IL.

Bulmash, S. B., & Maherz, A. 1985. Sharing rule contracts between management and investors and their effect on the management's attitude towards risk. ***Journal of Business Finance and Accounting,*** 12: 399–413.

Catanach, A. H., Jr. 1994. ***A causal investigation of risk, cash flow, and solvency in the savings and loan industry.*** Unpublished doctoral dissertation, Arizona State University, Tempe.

Catanach, A. H., Jr., & Brody, R. G. 1993. Intangible assets and the loan portfolio and deposit mixes of stock savings and loans. ***Accounting Horizons,*** 7: 12–29.

Chatterjee, S., & Lubatkin, M. 1990. Corporate mergers, stockholder diversification, and changes in systematic risk. ***Strategic Management Journal,*** 11: 255–269.

Cole, R. A. 1993. When are thrift institutions closed? An agency-theoretic model. ***Journal of Financial Services Research,*** 7: 283–307.

Collins, J. M., & Ruefli, T. W. 1995. ***Industry firm and business-level ex post risk measures in strategic management research: Auld lang syne?*** Paper presented at the annual meeting of the Academy of Management, Vancouver.

Cool, K., Dierickx, I., & Jemison, D. 1989. Business strategy, market structure and risk-return relationships: A structural approach. ***Strategic Management Journal,*** 10: 507–522.

Cyert, R. M., & March, J. G. 1992. ***A behavioral theory of the firm*** (2nd ed.). Cambridge, MA: Blackwell.

D'Aveni, R. A. 1989. The aftermath of organizational decline: A longitudinal study of the strategic and managerial characteristics of declining firms. ***Academy of Management Journal,*** 32: 577–605.

Elitzur, R. R., & Yaari, V. 1995. Executive incentive compensation and earnings manipulation in a multi-period setting. ***Journal of Economic Behavior and Organization,*** 26: 201–219.

Fama, E. F. 1980. Agency problems and the theory of the firm. ***Journal of Political Economics,*** 88: 288–307.

Fama, E. F., & Jensen, M. C. 1983. Agency problems and residual claims. ***Journal of Law and Economics,*** 26: 327–349.

Fiegenbaum, A. 1990. Prospect theory and the risk-return association: An empirical examination in 85 industries. ***Journal of Economic Behavior and Organization,*** 14: 187–204.

Fiegenbaum, A., & Thomas, H. 1986. Dynamic and risk measurement perspectives on Bowman's risk-return paradox for strategic management: An empirical study. ***Strategic Management Journal,*** 7: 395–408.

Frecka, T. J., & Lee, C. F. 1983. Generalized financial ratio adjustment processes and their implications. ***Journal of Accounting Research,*** 21: 308–316.

Gomez-Mejia, L. 1994. Executive compensation: A reassessment and a future research agenda. In G. Ferris (Ed.), ***Research in personnel and human resources management,*** vol. 12: 161–222. Greenwich, CT: JAI Press.

Gooding, R. Z., Goel, S., & Wiseman, R. M. 1996. Fixed versus variable reference points in the risk-return relationship. ***Journal of Economic Behavior and Organization,*** 29: 331–350.

Greenhalgh, L. 1983. Organizational decline. In S. B. Bacharach (Ed.), ***Research in the sociology of organizations,*** vol. 2: 231–276. Greenwich, CT: JAI Press.

Gupta, A. K. 1987. SBU strategies, corporate-SBU relations, and SBU effectiveness in strategy implementation. ***Academy of Management Journal,*** 30: 477–500.

Hadaway, B. 1985. Discretionary managerial behavior effects of savings and loan conversions: Competitive implications for the industry in a deregulated environment. ***Applied Economics,*** 17: 451–466.

Hambrick, D. C., & D'Aveni, R. A. 1988. Large corporate failures as downward spirals. ***Administrative Science Quarterly,*** 33: 1–23.

Hambrick, D. C., & Schecter, S. M. 1983. Turnaround strategies for mature industrial-product business units. ***Academy of Management Journal,*** 26: 231–248.

Haveman, H. 1993. Organizational size and change: Diversification in the savings and loan industry after deregulation. ***Administrative Science Quarterly,*** 38: 20–50.

Hillman, A. J., Cannella, A. A., & Paetzold, R. L. 1996. ***The board of directors as an environ-***

mental link: An examination of the non-agency role in regulation and deregulation. Working paper series, Texas A&M University, College Station.

Hoskisson, R. E., Hitt, M. A., & Hill, C. W. L. 1992. Managerial incentives and investment in R and D in large multiproduct firms. ***Organization Science,*** 3: 1–17.

Hoskisson, R. E., & Turk, T. A. 1990. Corporate restructuring: Governance and control limits of the internal capital market. ***Academy of Management Review,*** 15: 459–477.

Jegers, M. 1991. Prospect theory and the risk-return relation: Some Belgian evidence. ***Academy of Management Journal,*** 34: 215–225.

Jensen, M. C. 1986. Agency costs of free cash flow, corporate finance, and takeovers. ***American Economic Review,*** 76: 323–329.

Jensen, M. C., & Meckling, W. H. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. ***Journal of Financial Economics,*** 3: 305–360.

Judge, G. G., Griffiths, W., Lutkepohl, H., & Lee, T. 1988. ***Introduction to the theory and practice of econometrics*** (2nd ed.). New York: Wiley.

Kahneman, D., & Lovallo, D. 1993. Timid choices and bold forecasts: A cognitive perspective on risk taking. ***Management Science,*** 39: 17–31.

Kahneman, D., & Tversky, A. 1979. Prospect theory: An analysis of decisions under risk. ***Econometrica,*** 47: 262–291.

Kanter, R. M. 1983. ***The changemasters.*** New York: Simon & Schuster.

Kmenta, J. 1986. ***Elements of econometrics*** (2nd ed.). New York: Macmillan.

Kohers, T., & Simpson, W. 1984. Ownership form, regulatory status, and performance in the savings and loan industry. ***Review of Business and Economic Research,*** 20: 63–75.

Lant, T. K. 1992. Aspiration level adaptation: An empirical exploration. ***Management Science,*** 38: 623–644.

Laughhunn, D. J., Payne, J. W., & Crum, R. 1980. Managerial risk preferences for below target returns. ***Management Science,*** 26: 1238–1249.

Leibenstein, H. 1980. ***Beyond economic man: A new foundation for microeconomics.*** Cambridge, MA: Harvard University Press.

Lev, B. 1969. Industry averages as targets for financial ratios. ***Journal of Accounting Research,*** 7: 290–299.

Lev, B. 1974. On the association between operating leverage and risk. ***Journal of Financial and Quantitative Analysis,*** 9: 627–641.

MacCrimmon, K. R., & Wehrung, D. A. 1986. ***Taking risks: The management of uncertainty.*** New York: Free Press.

Machina, M. J. 1983. Generalized expected utility analysis and the nature of observed violations of the independence axiom. In B. Stigum & F. Wenstøp (Eds.), ***Foundations of utility and risk theory with applications:*** 263–296. Boston: Kluwer Academic.

Makadok, R. 1996. ***Risk, performance, and survival: An agency-theoretic perspective.*** Paper presented at the annual meeting of the Academy of Management, Cincinnati.

Mao, J. C. T. 1970. Survey of capital budgeting: Theory and practice. ***Journal of Finance,*** 25: 349–360.

March, J. G., & Shapira, Z. 1987. Managerial perspectives on risk and risk taking. ***Management Science,*** 33: 1404–1418.

March, J. G., & Shapira, Z. 1992. Variable risk preferences and the focus of attention. ***Psychological Review,*** 99: 172–183.

March, J. G., & Simon, H. A. 1958. ***Organizations.*** New York: Wiley.

Mester, L. 1989. Testing for expense preference behavior: Mutual vs. stock savings and loans. ***Rand Journal of Economics,*** 20: 483–498.

Mester, L. 1991. Agency costs among savings and loans. ***Journal of Financial Intermediation,*** 1: 257–278.

Meyer, A. D. 1982. Adapting to environmental jolts. ***Administrative Science Quarterly,*** 27: 515–537.

Miller, K. D., & Bromiley, P. 1990. Strategic risk and corporate performance: An analysis of alternative risk measures. ***Academy of Management Journal,*** 33: 756–779.

Miller, K. D., & Leiblein, M. J. 1996. Corporate risk-return relations: Returns variability versus downside risk. ***Academy of Management Journal,*** 39: 91–122.

Montgomery, C., & Wernerfelt, B. 1991. Sources of superior performance: Market share vs. industry effects in the U.S. brewing industry. ***Management Science,*** 37: 954–959.

O'Hara, M. 1981. Property rights and financial firm. ***Journal of Law and Economics,*** 24: 317–332.

Oviatt, B. M., & Baurschmidt, A. D. 1991. Business risk and return: A test of simultaneous relationships. ***Management Science,*** 37: 1405–1423.

Payne, J. W., Laughhunn, D. J., & Crum, R. 1981. Further tests of aspiration level effects in risky choice behavior. ***Management Science,*** 27: 953–958.

Reger, R. K., Duhaime, I. M., & Stimpert, J. L. 1992. Deregulation, strategic choice, risk and financial performance. ***Strategic Management Journal,*** 13: 189–204.

Ruefli, T. W. 1990. Mean-variance approaches to risk-return relationships in strategy: Paradox lost. ***Management Science,*** 36: 368–380.

Rudolph, P., & Hamdan, B. 1988. An analysis of post-deregulation savings and loan failures. ***AREUEA Journal,*** 16: 17–33.

SAS Institute. 1988. ***SAS/ETS users guide.*** Cary, NC: SAS Institute.

Saunders, A., Strock, E., & Travlos, N. G. 1990. Ownership structure, deregulation and bank risk taking. ***Journal of Finance,*** 45: 643–654.

Schön, D. A. 1971. ***Beyond the stable state.*** New York: Norton.

Shapira, Z. 1995. ***Risk taking: A managerial perspective.*** New York: Russell Sage Foundation.

Sheshunoff Information Services. 1990. ***Savings and loan associations: Minnesota, 1986.*** Chicago: Sheshunoff Information Services.

Simon, H. A. 1947. ***Administrative behavior.*** New York: MacMillan.

Singh, J. H. 1986. Performance, slack and risk taking in organizational decision making. ***Academy of Management Journal,*** 29: 562–585.

Sinkey, J. J., & Greenawalt, M. 1991. Loan-loss experience and risk-taking behavior at large commercial banks. ***Journal of Financial Services Research,*** 5: 43–59.

Sitkin, S. B., & Pablo, A. L. 1992. Reconceptualizing the determinants of risk behavior. ***Academy of Management Review,*** 17: 9–38.

Sitkin, S. B., & Weingart, L. R. 1995. Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity. ***Academy of Management Journal,*** 38: 1573–1592.

Staw, B. M., Sandelands, L. E., & Dutton, J. E. 1981. Threat-rigidity effects in organizational behavior: A multilevel analysis. ***Administrative Science Quarterly,*** 26: 501–524.

Strunk, N., & Case, F. 1988. ***Where deregulation went wrong: A look at the causes behind savings and loan failures in the 1980s.*** Chicago: United States Savings League.

Thaler, R. H. 1985. Mental accounting and consumer choice. ***Marketing Science,*** 4(3): 199–214.

Thaler, R. H. 1990. Anomalies: Saving, fungibility, and mental accounts. ***Journal of Economic Perspectives,*** 4(1): 193–205.

Thaler, R. H., & Johnson, E. J. 1990. Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice. ***Management Science,*** 36: 643–660.

Tosi, H. L. 1992. ***A "meso" approach to organizations.*** Greenwich, CT: JAI Press.

Tversky, A., & Kahneman, D. 1986. Rational choice and the framing of decisions. ***Journal of Business,*** 59: S251–S278.

Tversky, A., & Kahneman, D. 1991. Loss aversion in riskless choice: A reference dependent model. ***Quarterly Journal of Economics,*** 107: 1039–1061.

Tversky, A., & Kahneman, D. 1992. Advances in prospect theory: Cumulative representation of uncertainty. ***Journal of Risk and Uncertainty,*** 5: 297–323.

Verbrugge, J., & Goldstein, S. 1981. Risk, return, and managerial objectives: Some evidence from the savings and loan industry. ***Journal of Financial Research,*** 4: 45–58.

Walsh, J. P., & Seward, J. K. 1990. On the efficiency of internal and external corporate control mechanisms. ***Academy of Management Review,*** 15: 421–458.

White, L. 1991. ***The S&L debacle: Public policy lessons for bank and thrift regulation.*** New York: Oxford University Press.

Wiseman, R. M., & Bromiley, P. 1991. Risk-return associations: Paradox or artifact? An empirically tested explanation. ***Strategic Management Journal,*** 12: 231–241.

Wiseman, R. M., & Bromiley, P. 1996. Toward a model of risk taking among declining organizations: An empirical examination of risk, performance and decline. ***Organization Science,*** 7: 524–543.

Wiseman, R. M., & Gomez-Mejia, L. R. 1998. Corporate governance and managerial risk taking: A synthetic view. ***Academy of Management Review:*** In press.

Woo, C. Y. 1987. Path analysis of the relationship between market share, business-level conduct and risk. ***Strategic Management Journal,*** 3: 149–168.

Wright, P., Ferris, S. P., Sarin, A., & Awasthi, V. 1996. Impact of corporate insider, blockholder, and institutional equity ownership on firm risk taking. ***Academy of Management Journal,*** 39: 441–463.

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A STRUCTURAL CONTINGENCY APPROACH TO BUREAUCRACY AND DEMOCRACY IN U.S. NATIONAL UNIONS

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Drawing on industrial relations and organizational science concepts, in this article we apply elements of contingency theory to national unions' representative and administrative structures. We argue that these structures are distinct and develop in response to different organizational and environmental imperatives. These ideas were tested with a unique set of data on unions' characteristics and environments. The results provide broad support for our approach and suggest that greater collaboration among industrial relations and organizational science scholars would benefit both literatures.

Democratic governance systems are central features of voluntary membership organizations intent on legitimizing their goals and securing member participation. Such systems have also been more generally touted as keys to greater organizational effectiveness. The economic democracy, empowerment, participative management, and total quality management movements all advocate granting employees greater say (if not actual voting rights) in decisions. Yet, perhaps because many advocates of participation view it as a universal good, little attention has been focused on identifying the conditions that influence the development of democratic governance systems within private organizations (Ledford & Lawler, 1994: 635). Whether the elaboration of governance systems retards, supplants, or complements bureaucratic administrative systems is also unclear.

To gain insight into these issues, we drew on the industrial relations and organizational science literatures to study these systems in national unions. We focused on unions because industrial relations scholars have long been interested in unions' efforts to balance their administrative and representative imperatives. For its part, organizational science offers a rich literature on

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bureaucracy. Applying organizational science to the study of unions may also suggest new insights into a long-standing debate and enhance industrial relations' contribution to the study of organizations generally.

In the pages that follow, we develop and test a model in which union administrative and representative structures are seen as the product of distinct, albeit overlapping, forces. Results support several hypotheses and suggest that organizational democracy is a critical choice variable contingent on internal and external imperatives. More generally, our results suggest that organizational theory explains variation in both union structures that are similar to those found in most organizations (i.e., administrative structures) and union structures that are different from those found in most organizations (i.e., representative structures). We conclude with a call for more dialogue among organizational scientists and industrial relations scholars.

PRIOR WRITINGS ON BUREAUCRACY AND DEMOCRACY IN NATIONAL UNIONS

A distinguishing feature of unions is the simultaneous operation of "twin rationales" (Child, Loveridge, & Warner, 1973). On the one hand, unions are democracies. They are formed to serve members' interests and rely to a large extent on voluntary member activity to achieve basic goals. The logic of goal formation requires the development of *representative* systems that provide members with input and influence over union leaders and decisions. On the other hand, most national unions are bureaucracies. Reflecting a logic of goal implementation, they have developed *administrative* systems that employ professional staffs in specialized units to carry out their operations effectively and efficiently. In short, unions must operate as bureaucracies and democracies for, more than most organizations, their survival depends both on how well they pursue organizational objectives *and* on how effective they are in aggregating and serving the parochial interests of their members.

The links between the administrative and representative systems and these systems' effects on union performance have spawned much debate. The dominant view (e.g., Lipset, Trow, & Coleman, 1956) stresses conflict, arguing that development of administrative systems adversely affects representative systems.

Virtually all writers (e.g., Barbash, 1967; Lester, 1958; Lipset et al., 1956; Strauss, 1991) have agreed that market expansion, centralized bargaining, increases in employer size, and more complex negotiations have motivated unions to rationalize their administrative systems to remain successful bargaining organizations. Those in the "conflict school" have argued that professionalization and specialization of the administrative function transfers decision-making power from representatives to administrative systems. The more specialized and expert the staff, the lower the involvement of the general membership in union decisions (Lincoln & Zeitz, 1980: 400). Accepting Michels's (1959) "iron law of oligarchy," these authors have sug-

gested that union leaders' desire to stay in office encourages rationalization and use of administrative systems to thwart efforts to improve the efficacy of the representative system. Eventually, unions become highly bureaucratized as the more dynamic administrative systems outflank static representative systems, leaving members with little direct say in decision making and little ability to influence union officials.

Although the dominant view stresses the impact of bureaucracy on democracy, some conflict school writers have focused on the opposite relationship. For example, Donaldson and Warner (1974: 54–55) speculated that filling positions by election rather than appointment produces leaders who are not purely "bureaucratic figures" (Weber, 1968). Such leaders may resist rationalization of administrative tasks. Bok and Dunlop (1970: 84–91 and 186–188) noted that political pressures may motivate leaders to make staff appointments based on political patronage rather than merit, that members may use democratic processes to oppose administrative reform, and that elections may impede the development of a qualified pool of union leaders (a point echoed by Donaldson and Warner [1974: 54]). Yet the basic message is one of conflict—elaboration of one system impedes development of the other.

In contrast to the conflict school, a minority view on the development of unions (e.g., Barbash, 1967; Kochan, 1980) stresses the complementarity of administrative and representative systems. For example, Knoke (1990: 12) observed that many elements of government bureaucracy were instituted by popular demand for due process and equality under the law. Those in the "complementarity school" concede that left unchecked, bureaucracy can emasculate democracy. But, these writers argue, structures can be erected to enhance member participation in decision making and create sources of countervailing power that ensure leaders remain responsive to member interests. Kochan (1980: 158–159), for one, suggested that administrative techniques can be adapted to help promote union democracy. Among the reforms suggested are the creation of interest groups (e.g., a women's caucus) with access to decision-making processes, officer elections on a regional rather than national basis, and the creation of unionwide information dissemination systems. If members want to preserve democracy, growth of administrative systems may bring member demands for more elaborate representative systems to check administrative power. This view suggests parallel development of the representative and administrative systems of large unions.

Empirical research on union administrative and representative systems has failed to resolve the debate between these two schools. There is limited evidence indicating a positive association between measures of bureaucratic and democratic structures within national unions (e.g., Edelstein & Warner, 1976). Yet the evidence from these studies is by no means uniform, and the sources of the relationships that have been suggested are obscure. Because authors have typically assumed that administrative systems are more dynamic than their representative counterparts (e.g., Edelstein & Warner,

1976), the dominant approach has been to take representative systems as given and to focus attention on the causes and consequences of developments in administrative systems. Even those authors who argue that representative systems can serve as an important check on administrative power seem to view such structures as exogenous or as largely the result of idiosyncratic events (cf. Lipset et al., 1956). Thus, little systematic effort has been made to identify the factors that influence development of representative systems in unions, to determine the degree to which these factors differ from those influencing their administrative systems, or to explore the degree to which any association between measures of the two systems is causal or spurious. Systematic evidence on the relative ability of these two systems to enhance and redistribute decision-making power within unions is also lacking.

The main exception is Knoke (1990: 157–161), who suggested that the representative systems of voluntary membership associations (including unions) may be the product of environmental and internal imperatives. Yet, although his estimates (1990: 159) provided support for several hypotheses, he ultimately concluded that representative systems exhibit a remarkable degree of similarity and that differences in them "are relatively random and not systematically related to external or internal conditions" (1990: 161). Knoke claimed that representative systems are largely a consequence of cultural institutionalization and although generally invariant, provide effective mechanisms that "rein in tendencies toward power usurpation by leaders" (1990: 161). According to Knoke, democracy *must* be practiced in such organizations, regardless of its impact on administrative efficiency or fit with organizational goals or environments.

In essence, Knoke offered a third view, one whereby representative systems are seen as largely impervious to efforts to corrupt their development and erode their power. Yet, although Knoke viewed representative systems as effective constraints on administrative power, he did not fully explore how democracy influences administrative systems. This omission is unfortunate because democracy's impact on administrative systems may be greater in unions than in other associations. Unlike most associations (e.g., trade associations), a union focuses on its members' jobs and typically strives to standardize conditions of employment to ensure the long-term survival of both those jobs and the union. This effort requires cooperation and coordination among all political subunits (i.e., locals). Dissidents cannot simply be expelled or secede, for renegade locals would continue to threaten national union goals. High interdependence among politically powerful subunits may motivate leaders to deviate from good administrative practice and employ political patronage to preserve internal harmony. Even if democracy is robust to bureaucracy, the reverse may not be true.

A CONTINGENCY APPROACH

Does elaboration of administrative systems emasculate representative systems, as the conflict school's majority view implies? Do representative

systems create new structures to match advances in administrative systems and preserve member influence, as the complementarity school view suggests? Or are representative systems largely unresponsive to and unaffected by developments in administrative systems—are representative systems the result of cultural forces that compel all unions to adopt similar systems, as Knoke proposed? And, even if representative systems develop independent of administrative systems, might members use them to thwart growth in administrative systems (the conflict school's minority view)?

To fully understand the relationship between representative and administrative systems would require time series data on the structural and behavioral aspects of both systems for a large sample of unions. The dominant case study method found in the literature has failed to produce *systematic* quantitative evidence on these relationships, even within contemporary unions. To fill this void in the literature, we focused on representative and administrative structures in a cross-section of national unions.

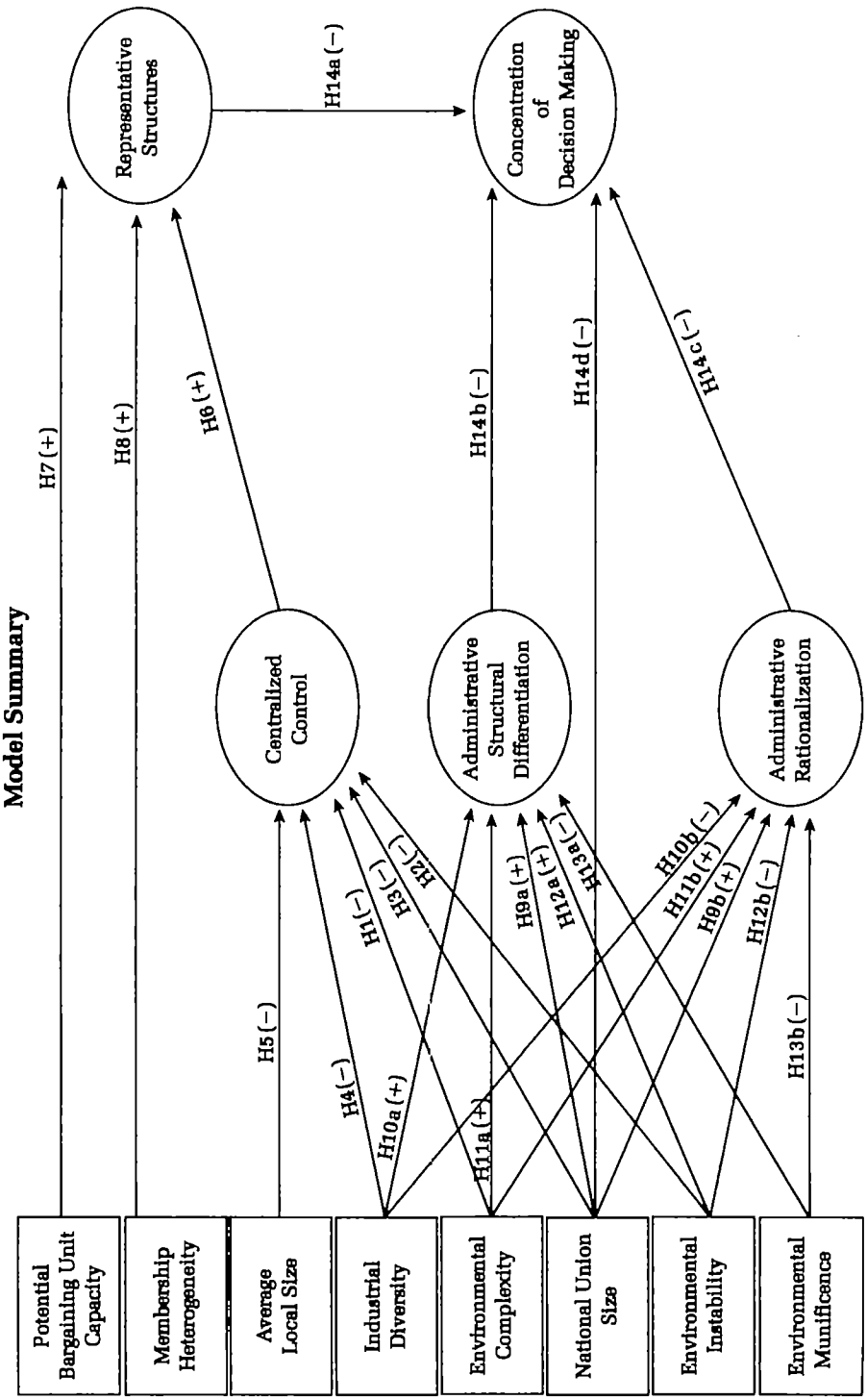
We emphasized structures over behaviors for two reasons. First, most writers have agreed that membership size severely limits direct participation by the rank and file in national union affairs. As Strauss (1991) noted, the key to effective representative forms of government lies in the creation of formal mechanisms by which members can change their leaders and oppose leaders' policies without fear of retribution. Second, structures tend to exhibit greater stability than behaviors. Widespread member use of representative structures may only occur when dissatisfaction with the leadership is high or a divisive issue becomes prominent. Cross-sectional comparisons of behavioral measures may confound systematic differences in governance with transitory influences on member propensity to invoke representative structures. A major limitation of the structural approach is that it does not allow an examination of how the administrative system may limit democratic behaviors or whether representative structures counteract such effects. Yet, given the paucity of systematic evidence on national union administrative and representative systems, clarification of these relationships at the structural level provides a better basis for understanding the purpose of both systems and the imperatives that shape their development.

To clarify these relationships, we employed elements of a contingency approach that relies on Child and colleagues' (1973) distinction between goal formation and goal implementation. Although goal formation cannot be completely dissociated from goal implementation, this conceptual distinction allows us to identify discrete, albeit overlapping, influences on the national union structures that have primary authority over such matters. The influences depicted in Figure 1 lead us to argue that, contrary to conventional perspectives, administrative and representative structures are largely distinct and that unions fashion each structure to meet unique imperatives.

Representative Systems and Structures

Goal formation is a function of representative systems. Vested in a union's representative system is the power to identify and prioritize goals,

FIGURE 1
Model Summary



engage in policy formation, and allocate resources to the pursuit of objectives. The representative structure comprises the constitutionally recognized bodies and offices empowered to make such decisions and the formal (e.g., elections) and informal (e.g., caucuses) channels for members' influence. The greater the number of representative bodies and offices, the more numerous the sources of countervailing power. Also, the more prevalent the opportunities for member participation and influence, the more elaborate the representative structure.

The degree of centralized control over goal formation varies across national unions. Some unions rely largely on national representative bodies and officers to set goals that all affiliates are obligated to pursue. Other unions leave goal formation largely to local officers and governing bodies. In the industrial relations literature, the decision to vest power at the national level has been largely viewed as a function of the need to coordinate activities among workers in national product markets (Hendricks et al., 1993; Strauss, 1993). For example, a national union with all locals operating in the same national product market must pursue a common level of worker compensation (holding other factors constant) to discourage employers from competing on labor costs. Goal formation must be centralized and uniformly pursued. In contrast, a national union operating in local product markets has little need to centralize control over goal formation since locals may pursue interests relatively independently. Similar predictions are found in the organizational science literature, where environmental heterogeneity (i.e., complexity) is seen as a force favoring decentralization (e.g., Dess & Beard, 1984). Concurrent operation in multiple markets requires decentralized goal formation to accommodate members operating in diverse contexts.

Hypothesis 1. Environmental complexity will be negatively related to centralized control over goal formation.

Although the need to coordinate activities is of paramount importance, environmental instability (or unpredictability) also encourages decentralized goal formation. Such instability enhances organizational participants' perceived uncertainty (Duncan, 1972) and generates disputes over goals and directions, making it difficult to centralize control over goal formation at the national level. Similarly, environmental instability is incompatible with autocratic (i.e., centralized) governance because the rigidities of leader domination are incompatible with rapid adaptation (Knoke, 1990: 158). Interestingly, as Strauss (1993: 24) noted, these predictions conflict with themes in the industrial relations literature (e.g., Kochan & Wever, 1991: 366–367) that suggest decentralization hampered U.S. unions' ability to cope with environmental instability in the late 1970s and 1980s.

Hypothesis 2. Environmental instability will be negatively related to centralized control over goal formation.

The degree to which goal formation is vested at the national level also depends on the characteristics of unions themselves. There is general consen-

sus in the organizational science literature that largeness encourages decentralization (Daft, 1986: 179; Scott, 1987: 244). Largeness suggests environmental heterogeneity, but also increased information-processing demands, which will make it difficult to vest authority over goal formation with a few top leaders (Daft, 1986: 179).

Hypothesis 3. National union size will be negatively related to centralized control over goal formation.

Unions operating in many industries or in national product markets likely favor decentralized goal formation. The need for intraunion coordination is largely limited to market boundaries and, as with size, greater information-processing demands make it difficult to vest all goal formation authority in a few top leaders. Industrial diversity may be seen as part of environmental complexity, but because diversification is an organizational choice, it is effectively a union characteristic.

Hypothesis 4. Industrial diversity will be negatively related to centralized control over goal formation.

Local union size may also affect goal formation. Large locals may resist efforts to centralize control at the national level for political reasons (Strauss, 1993) and may be less prone to the kind of myopic behavior that centralized goal formation prevents (Lazear, 1983).

Hypothesis 5. Average local size will be negatively related to centralized control over goal formation.

Where to locate control over goal formation has profound consequences for national unions' representative structures. Centralized goal formation requires more elaborate representative structures that permit local unions and members to reduce equivocality through the development of shared values and interpretations and reach consensus on uniform goals. In contrast, where goal formation is vested at the local level, such broad-based consensus building is unnecessary, and national representative structures are largely limited to more mundane administrative oversight functions.

Hypothesis 6. Centralized control over goal formation will be positively related to the elaboration of national union representative structures.

Regardless of the degree to which goal formation is centralized at the national union level, more elaborate representative structures will exist where members exhibit a capacity to participate in decisions. Such structures have little value where members lack the education, skill, and resources to use them. For example, Strauss (1991: 227–228) argued that "high-status" workers are typically more comfortable with parliamentary procedures and willing to make decisions without the aid of paid officials. Given that worker education and skill are related to earnings, such workers are also more able to afford the costs of representative structures and, where

concentrated in large numbers, can supply their bargaining units with ample resources to support participation in national union bodies.

> *Hypothesis 7. Bargaining unit capacity will be positively related to the elaboration of national union representative structures.*

Similarly, the greater the diversity in members' preferences, the more avenues of communication members will demand. If members held identical preferences, there would be little need for representative structures. Any member could assume a leadership post and be expected to pursue the goals embraced by the rank and file. Oligarchy or autocracy would provide an efficient governance structure. Member concerns would be limited to maintenance of a system for eliminating incompetence, shirking, or theft on the part of leaders. But where preferences are diverse, members will demand mechanisms that ensure leaders do not pursue purely parochial interests. The greater the scope of formal authority over goal formation granted leaders and the greater the scope of interests a representational system must accommodate, the greater the potential for leaders to make choices that harm the interests of some members and the more elaborate the structure to limit leader discretion and autonomy. Often, the same structures designed to communicate member interests to leaders may be used to constrain leader behavior. For example, female members may establish women's caucuses as a means of communicating with the leadership. Such caucuses might also evaluate leader performance on "women's issues" and serve as vehicles for opposing policies harmful to women's interests. It may be that members grant leaders much authority and are often unaware of their leaders' actions. But this delegation does not mitigate members' desire for mechanisms that allow them to oppose decisions that are harmful to their interests.

> *Hypothesis 8. Membership heterogeneity will be positively related to the elaboration of national union representative structures.*

Administrative Systems and Structures

Goal implementation is vested in administrative systems. A union's administrative structure is composed of the various departments and staff charged with carrying out day-to-day policy implementation. The more administrative subunits there are (the higher the structural differentiation) and the greater the planning, coordination, and integration of work across and within departments (i.e., the greater the rationalization), the more elaborate the administrative structure. Both administrative structural differentiation and administrative rationalization are associated with classical views of bureaucracy, and increases in either suggest efficiency gains through the planned exploitation of the division of labor. Yet greater structural differentiation also suggests greater heterogeneity of work, which can create problems of coordination and integration, which are dysfunctional elements of administrative rationalization (Blau, 1973). Because of this potential conflict

between rationalization and structural differentiation and the potential for contingencies to have distinct influences on these two administrative system attributes, we treat them separately below.

An administrative structure is largely a function of organizational size, industrial diversity, and task environment characteristics. Size fosters differentiation because large units can be difficult to manage and large organizations have more resources with which to support specialization (Blau, 1973; Daft & Bradshaw, 1980). Greater size also increases the volume of similar kinds of work and information-processing demands, thereby promoting standardization and formalization of job assignments (Scott, 1987: 242–244) and the growth of intraorganizational coordination systems (Scott, 1987: 215–223).

Hypothesis 9a. National union size will be positively related to administrative structural differentiation.

Hypothesis 9b. National union size will be positively related to administrative rationalization.

Organizations diversify administrative structures to meet the specialized demands of various operating environments (Scott, 1987: 250). The more distinct environments are, the greater the number of environment-specific experts that must be hired to monitor events, devise and administer policies to achieve specialized goals, and service particular local needs. Such market diversification promotes a divisionalized structure that permits high levels of formalization and standardization within divisions but few communication and coordination systems across divisions (Mintzberg, 1979). From the perspective of the union as a whole, the result is a less rationalized administrative structure.

Hypothesis 10a. Industrial diversity will be positively related to administrative structural differentiation.

Hypothesis 10b. Industrial diversity will be negatively related to administrative rationalization.

Features of the task environment include complexity, instability, and munificence (Dess & Beard, 1984). Environmental complexity taps the information-processing demands that largely result from heterogeneity in an organization's primary domain. Such complexity prompts formation of specialized units (Scott, 1987: 250). Experts are hired, action plans formalized, and activities coordinated (Scott, 1987: 140). The result is a more differentiated and more rationalized structure.

Hypothesis 11a. Environmental complexity will be positively related to administrative structural differentiation.

Hypothesis 11b. Environmental complexity will be positively related to administrative rationalization.

Instability focuses on the degree of unexpected change that occurs in a task environment. Instability reduces standardization and formalization, but

it may increase communication and coordination, as firms replace mechanistic structures with more organic ones (Burns & Stalker, 1961). Instability's impact on structural differentiation is less clear. Empirical results have been mixed (e.g., Keats & Hitt, 1988: 587), but a prevailing view is that organizations respond to instability by segmenting their environments into more homogenous elements (Lawrence & Lorsch, 1967) and spreading risk through diversification into more stable environments (Keats & Hitt, 1988: 573).

Hypothesis 12a. Environmental instability will be positively related to administrative structural differentiation.

Hypothesis 12b. Environmental instability will be negatively related to administrative rationalization.

Administrative structures are affected by the extent to which critical resources are available in an environment. Organizations in meager environments must achieve efficient and effective administrative structures to survive. In contrast, organizations in munificent environments enjoy slack that helps to maintain coalitions and smooth intraorganizational conflict (Dess & Beard, 1984: 55). Munificent environments may facilitate staff selection by political patronage, permit staff greater latitude in performing duties (standardization and formalization are lower), and enable departments to act more autonomously (communication and coordination are lower) than maximum effectiveness would require. Munificence may also impede structural differentiation by abating the need to hire experts or diversify to reduce dependence on single exchange relationships (Keats & Hitt, 1988: 573). In short, munificence permits "satisficing" in the creation and maintenance of administrative structures.

Hypothesis 13a. Environmental munificence will be negatively related to administrative structural differentiation.

Hypothesis 13b. Environmental munificence will be negatively related to administrative rationalization.

Structural Relationships and Consequences

Elaboration of a national union administrative structure is more dependent on task environment characteristics than on the centralization of goal formation. To the extent that centralized goal formation spills over onto an administrative system, one would expect a *positive* relationship between representative and administrative structures. For example, the more goal formation is centralized at the national level, the more elaborate will be the national administrative structure required to monitor local compliance. Also, diverse membership interests may generate specialized goal formation units at the national union level (e.g., a skilled trades council within an industrial union) *and* specialized national administrative systems to implement these goals.

Nevertheless, we argue that national union administrative structures are

only loosely coupled to the degree of centralized control over goal formation. For example, an industrial union operating in one product market (but many local labor markets) may find it difficult to agree on common bargaining priorities when faced with a myriad of competing demands from its various local unions. Centralized goal formation requires an elaborate representative structure. But achieving bargaining goals may only require a simple administrative structure when a union is dealing with an unsophisticated employer enjoying a dominant position in a munificent product market. In contrast, a national union operating in many local product markets may permit local union autonomy over bargaining goals. Goal formation can be accommodated within a rudimentary national union representative structure. Yet bargaining with sophisticated employers operating in competitive environments may require these locals to pool their resources and develop an elaborate national administrative structure to provide technical support. Thus, there may be differences in the degree of representative and administrative structuring within unions, reflecting discrete goal formation and goal implementation requirements. At the structural level, democracy and bureaucracy do not conflict—they are mechanisms for dealing with distinct, albeit related, imperatives.

These structures respond to different imperatives, but both may disperse decision making throughout a union. Dispersion of decision making is a function of organizational size. As organizations grow, information-processing demands make it difficult for a small group to control all decisions (Hage & Aiken, 1967). Elaboration of the administrative structure systematizes and coordinates staff input, thereby facilitating the diffusion of decision-making authority throughout a union. Greater structural differentiation particularizes the administrative function, dividing and allocating decisions to staff on the basis of technical expertise, and elements of administrative rationalization (e.g., formalization and coordination) allow leaders to relinquish some decision-making authority to other organizational participants without a complete loss of control. Similarly, elaboration of representative structures results in a proliferation of governing bodies with overlapping jurisdictions and more mechanisms whereby members can influence goal formation. Together, these structures spread input and influence over decisions across members and staff.

Hypothesis 14a. Representative structures will be negatively related to concentration of decision making.

Hypothesis 14b. Administrative structural differentiation will be negatively related to concentration of decision making.

Hypothesis 14c. Administrative rationalization will be negatively related to concentration of decision making.

Hypothesis 14d. National union size will be negatively related to concentration of decision making.

METHODS

Data Collection

Varied data sources were used to test the hypotheses of interest. Relying largely on conventional items and measures (e.g., Price & Mueller, 1986), we developed a survey of national union structures and practices, which we called the National Union Survey (NUS). The survey was pretested on a small group of union officials. We then identified a sample frame of 150 U.S. national unions using published sources and information provided by members of the staff of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO). Telephone interviews each of about 25 minutes duration were conducted in the summer of 1990 by trained interviewers from the Iowa Social Science Institute at the University of Iowa. An effort was made to obtain multiple responses from key informants in each union. Respondents were asked to answer questions with reference to the entire union rather than to their department or national union headquarters, except in the case of a few items that focused on the latter.

The survey resulted in 275 interviews involving 111 national unions. These unions represented over 95 percent of all union members in the United States. We obtained at least one interview from 74 percent of the national unions in our sample frame and obtained multiple responses from 68 percent of the responding unions. Forty-one percent of the people contacted completed interviews. This response rate is deceiving, however, because financial constraints limited the number of responses from any union to four or fewer. Some individuals initially contacted were not pursued after the cap had been reached. Of the 275 interviews, 34 percent were with elected officials, and 66 percent were with union staff members.

Because our unit of analysis was national unions, individual responses were aggregated by union. For questions involving Likert-style opinion scales or numerical estimates, we obtained a union-level response by averaging individual responses. In cases in which a union had only a single respondent, that individual's response served as the union-level response. For questions with only one correct answer (e.g., unions either have associate membership programs or they do not), we based assignments on consensus among responses from the same union (75 percent of all assignments), or on majority rule (15 percent of all assignments), or on area of respondent expertise (10 percent of assignments). In making assignments based on respondent expertise, we generally gave higher-ranking officials' views greater weight than lower-ranking officials' or staff members' views.

Ninety-two unions also provided copies of their constitutions. A coding scheme based on Lahne's (1970) work was used to create measures of such characteristics as representative structures and centralized control. We assessed other union attributes and unions' environments using data from a variety of archival sources. The Appendix contains detailed information on the NUS items and archival measures employed in our analysis.

Because of difficulties in obtaining information on public sector envi-

ronments that parallel the data available in the private sector, 27 unions operating primarily in the public sector were dropped from the analysis. Of the 84 private-sector national unions that responded to our initial survey, 66 provided their constitutions. We dropped 10 unions operating largely under the Railway Labor Act because we had concerns about the comparability of data on their environments with the data on the other unions in the sample and because we relied on National Labor Relations Board (NLRB) data for some measures.[1] After casewise deletion for missing data, 50 national unions remained for the analysis. This sample includes about 10 cases in which we "reclaimed" data by calculating one or two indices on less than the full set of items contained in the scale. In no case did this procedure result in using observations for which more than a third of the index's items were missing.

Comparing these 50 unions (hereafter referred to as the multivariate sample) with the 150 national unions in our sample frame showed that the multivariate sample unions were larger (based on several indicators), had smaller percentages of their members concentrated in their primary jurisdictions, and were more likely to be AFL-CIO affiliates. The two groups did not statistically differ on other indicators, including recent changes in membership, organizational age, and bargaining coverage in their primary jurisdictions.

The characteristics overrepresented or underrepresented in the multivariate sample suggest bias in our analysis only to the extent that they are associated with differences in the relationships of interest between the multivariate sample unions and the population. Such association seems unlikely. We have no reason to believe AFL-CIO affiliation influences the relationships of interest. Similarly, neither Railway Labor Act nor public sector bargaining laws directly regulate internal union affairs. Yet these statutes may combine with a history of occupationally based unionism to discourage unions concentrated in one of these sectors from diversifying into other industries. This factor affecting the absent unions may have contributed to our finding that the multivariate sample unions had proportionately fewer members in their primary jurisdictions than did unions in the population. The industrial concentration of membership may affect the *degree* of representative, and even administrative, structuring in national unions. Yet we have no reason to expect that such concentration influences the pattern *among* such structures (i.e., the relationship between representative and administrative structures), the key issue under consideration. Finally, although not representative of the population on all dimensions, the multivariate sample contained a wide range of unions. For example, the national unions included ranged from 120 to 1.6 million members. For these reasons, it seems unlikely that sample selection issues seriously bias our analysis.

[1] Railroads and airlines are not under NLRB jurisdiction, and hence are not covered in its data.

Nonetheless, we caution readers to remember our multivariate sample differs from the population in some respects.

Measures

Union characteristics. Measures of nine union attributes were employed in the analysis. *Centralized control* was a 14-item index (α = .79), composed of NUS responses and data coded from union constitutions, on which level had the most authority (i.e., the vertical locus of authority) over goal formation for six union activities; activities included organizing, bargaining, and politics.

Representative structures were assessed using information from union constitutions. Not all representative structures are codified in union constitutions, and there may be considerable divergence between constitutional provisions and practice (see Hendricks et al. [1993: 371–372] for an extended discussion). Yet it seems reasonable to argue that constitutionally guaranteed structures are more durable and less susceptible to sabotage by autocratic leaders than informal practices. This 13-item index (α = .63) focused on two key dimensions of representative structure: (1) the degree to which members participated in or had direct influence over union decisions and leaders (e.g., whether members had to authorize strikes and approve changes in a constitution and had a constitutional right to require binding membership referenda on important issues) and (2) the degree of independent countervailing sources of power within a union (e.g., officials and staff were not automatic delegates to the national convention, constitution prohibited leaders from serving in more than one leadership post at a time).

Two measures captured the degree of administrative structuring within a national union. *Administrative structural differentiation* was a five-item index (α = .71), constructed from NUS items and archival sources, that assessed the degree of departmentalization, divisionalization, and specialization within an administrative system. *Administrative rationalization* was a nine-item index (α = .65) constructed from NUS items. It assessed the degree to which tasks were standardized, formalized, and coordinated among units and information was clearly communicated to union personnel.

Concentration of decision making tapped the degree to which decision making and influence were shared throughout a union. Adapted from Knoke (1990), the three-item index asked respondents about the degree to which leaders could take actions without consulting staff or members (α = .69).

National union size was a three-item index (α = .92) based on a union's membership, total assets, and total annual dues receipts as reported in the NUS or archival sources.

Average local size was the natural logarithm of membership per local. Membership per local was national union membership as reported in the NUS divided by the number of affiliated local unions reported in archival sources. Two sample unions lacked traditional locals (Actor's Equity and the American Guild of Musical Artists), and for these unions we set values near zero (.0001) before taking the logarithm.

Industrial diversity was a two-item index (α = .84) that assessed the breadth of industries, defined in terms of two-digit Standard Industrial Classification (SIC) codes, in which a union actively sought new members from 1986 to June 1990. One item was the number of two-digit SIC industries in which the union had held at least one election. The second measure was the proportion of all NLRB elections that were held outside the 4 two-digit SIC industries in which the union held the greatest number of elections.

Membership heterogeneity was an index that measured diversity in three member attributes: race, gender, and white-collar/blue-collar employment. We assumed that members who differed on these attributes had different work-related interests. The measure takes on its highest value in a union in which the percentages of women, minority members, and white-collar employees are each equal to 50 percent. This measure's internal consistency was low (α = .45), but it does not conform to the assumptions of classical test theory since its elements are best thought of as "causal," rather than "effect," indicators of the latent variable (cf. Bollen & Lennox, 1991).

Union environments. Operationally defining national union environments was difficult. Exclusive jurisdiction once limited each national union to a well-defined industry or craft, but many unions have diversified and now operate in several distinct environments (Seeber, 1984).

Hendricks and colleagues (1993) offered two options for dealing with the issue of definition. One option is assuming that a union adopts structures that serve its average member or environment. Under this option, a national union's environment would be conceptualized and measured as weighted averages of ratings of the characteristics of the distinct environments in which the union operates (i.e., a synthetic environment). The other option is assuming that the union's dominant environment determines structures. Under this option, a national union's environment would be conceptualized and measured by reference to the union's primary jurisdiction.

We favored the primary jurisdiction approach. National union jurisdictions have expanded over time, but the notion of a primary jurisdiction still has empirical validity for most unions (Fiorito, Jarley, & Delaney, 1995). To the extent that national unions' primary jurisdictions correspond to their historic jurisdictions, this approach is generally consistent with Stinchcombe's (1965) view that organizational structures are often the legacy of conditions extant at an organization's founding. It is only a small step to arguing that key changes in a union's structures are primarily the result of environmental change in its historic jurisdiction. Also, given crude data on the industrial distribution of each national union's membership, assigning broad primary jurisdictions involved fewer judgment calls than efforts to develop more refined synthetic environments. Given that Hendricks and colleagues' (1993) results were fairly insensitive to the choice between these two alternatives, the simplicity of the primary jurisdiction approach was another reason to favor it over the synthetic environment approach.

Primary jurisdictions were identified by the two-digit SIC industry in which a national union had the largest percentage of its members, as re-

ported in archival sources. We relied on two-digit SIC industries because the crudeness of the data that are available on union membership by industry (e.g., U.S. Bureau of Labor Statistics, 1980: Appendix 1; cf. Hendricks et al., 1993) made more refined assignments problematic. Furthermore, two-digit assignments mask modest expansions of union jurisdictions across closely related four-digit industries. Thus, our assignments may have emphasized rudimentary differences in environments, those most likely to generate differences in union structures.

To conceptualize and assess national union environments at the two-digit SIC level, we relied heavily on the work of Dess and Beard (1984) and Keats and Hitt (1988). A wide array of data by two-digit SIC industry was collected from archival sources for the five years from 1983 through 1987. We chose a five-year period because it was comparable in length with periods frequently used in studies of businesses. The 1983–87 time frame assumes a lag between environmental change and structural response and is centered on a period of rather intense self-examination within the labor movement (Fiorito & Jarley, 1992). It is also a period in which data were consistently reported using the same industry classification scheme (based on 1972 SIC codes modified in 1977).

Environmental measures were created and evaluated on the full set of two-digit SIC industries for which complete data were available ($N = 68$ industries). The resulting values were then mapped to national unions by two-digit SIC codes. Not all two-digit SIC industries served as the primary jurisdictions for national unions, and several two-digit industries were the primary jurisdictions for more than one union.

Environmental complexity was a five-item index ($\alpha = .76$) that tapped industry heterogeneity and its associated increased information-processing requirements for organizations. Two items assessed industry size (i.e., the number of establishments, or potential bargaining units, and the number of employees); two assessed regional dispersion in industrial production (one based on establishments, the other on employees); and one assessed the percentage of workers not covered by a collective bargaining agreement. Greater industry size suggests greater heterogeneity, more units, and more geographic dispersion, all leading to greater information-processing demands for an organization (Keats & Hitt, 1988: 579). High geographic dispersion in production is also more consistent with local than with national product-markets and thus provides information on the degree to which a national union must assume a coordination function to take wages out of competition. Finally, collective bargaining coverage is associated with the degree of monopoly power within an industry (Hirsch & Berger, 1984). It has been suggested that industries with high monopoly power are low-complexity environments (e.g., Keats & Hitt, 1988: 579).

Environmental munificence was a seven-item index ($\alpha = .60$) that assessed the availability of external resources to support growth. In the union context, environmental munificence is tied to changes in the demand for and costs of providing union services. But, as "secondary organizations" (Ald-

rich, Staber, Zimmer, & Beggs, 1990), labor unions' fortunes are also tied to the fortunes of unionized employers. Measures that suggest a munificent environment for firms have implications for unions as well, including the potential for unionized firms' growth and the degree to which nonunion firms will resist unionization. Thus, the items that made up this index not only related to changes in the demand for and the costs of union services (e.g., growth in bargaining unit coverage and numbers of establishments) but also indicated industry growth in general (e.g., growth in employment and gross domestic product). Following the procedure outlined in Keats and Hitt (1988: 596–597), we transformed the annual values for each item from 1983 to 1987 into natural logarithms and regressed them on a linear time trend (and a constant) for each separate two-digit industry. The growth measures used in the composite were the antilogarithms of the regression slope coefficients for each item and industry.

Environmental instability was a seven-item index ($\alpha = .71$) that captured unexpected change in external conditions. It consisted of the antilogarithms of the standard errors on the linear time trend coefficient from the regression analyses described above and provided a measure of discontinuity that allowed similar scores for environments that presented similar patterns but started at different base levels.

Finally, *potential bargaining unit capacity* ($\alpha = .72$) captured the extent to which a union's primary jurisdiction could generate locals with members who were able to participate in decision making and willing to pay for the costs of representative structures. The three-item index comprised average compensation per employee, average annual wages per employee, and average employment per establishment for the 1983–87 period. Although not a direct measure of member ability to participate in decision making, higher average earnings per employee suggest higher worker skill and education levels. High earnings and large establishments also suggest a greater ability to create locals with the financial resources necessary to participate in national forums and governance bodies.

Estimation

The set of equations suggested by our hypotheses was largely recursive. Only the equations for representative structures and concentration of decision making had endogenous explanatory variables, and there was unidirectional dependency among all of the endogenous variables in the system. If the variance-covariance matrix of the disturbances were diagonal, consistent and unbiased estimates of all of the parameters could be obtained by ordinary least squares regression analysis. Yet the potential for common exogenous events to influence the disturbances of more than one equation—for instance, for events to influence more than one structure at the time an organization was founded, or for common method variance to arise for different dependent variables constructed from NUS items—rendered a diagonal variance-covariance matrix for the disturbances unlikely. To account for potential correlation between the endogenous predictors and the error terms

in the representative structures and concentration of decision making equations, we estimated these two overidentified equations by two-stage least squares. The remaining three equations were estimated using ordinary least squares. Although efficiency gains can be achieved through multiequation estimation techniques, examination of the variance-covariance matrix of the equation error terms after two-stage estimation suggested that such gains would have been small. Given the state of theory in this area and the fact that multiequation techniques spread the impact of specification error in one equation to the estimates of other equations in a system, we preferred the two-stage estimation method.

RESULTS

Table 1 provides the sample-constant correlation matrix used in the multivariate analysis. Our hypotheses were best tested in a multivariate framework, but some insights were gained from the bivariate results. Since we did not develop hypotheses about all possible pairs of variables shown in Table 1, we report two-tailed significance tests. Employing one-tailed significance tests for directional hypotheses yielded substantively similar results in all but one instance (see below). Among the dependent variables, two associations achieved standard levels of statistical significance. Consistent with Hypothesis 6, centralized control had a positive association with representative structures ($r = .42$, $p < .01$). Consistent with Hypothesis 14c, administrative rationalization exhibited a negative association with concentration of decision making ($r = -.27$, $p < .10$). In contrast, the data provide little support for the hypothesis that representative structures (Hypothesis 14a) reduce concentration of decision making ($r = -.20$, $p > .16$, two-tailed test, but $p < .10$, one-tailed test) and little support for the hypothesis that administrative structural differentiation (Hypothesis 14b) reduces such concentration ($r = .11$, $p > .45$). Also, contrary to expectations, administrative rationalization did not exhibit a positive association with administrative structural differentiation ($r = -.13$, $p > .38$).

We caution against overemphasizing the lack of statistical significance. Our sample size limited the statistical power of the tests, but four cases deserve comment. Consistent with our assertion that administrative structures are not driven by decisions to centralize power over goal formation made at the national union level, both administrative structural differentiation ($r = -.07$, $p > .60$) and administrative rationalization ($r = -.13$, $p > .38$) exhibited little correlation with centralized control. Similarly, both administrative structural differentiation ($r = -.18$, $p > .20$) and administrative rationalization ($r = .07$, $p > .63$) exhibited little correlation with representative structures, suggesting that representative structures and administrative structures may be the result of distinct influences. It would be an inappropriate use of statistical tests to conclude that these correlations were zero, but reference to the effect sizes suggests that these measures were largely unrelated. (Examination of the correlation matrix based on "pairwise" de-

TABLE 1
Means, Standard Deviations, and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
1. Centralized control	2.44	0.57												
2. Representative structures	12.38	6.11	.42**											
3. Administrative structural differentiation	1.09	0.81	−.07	−.18										
4. Administrative rationalization	3.95	0.46	−.13	.07	−.13									
5. Concentration of decision making	2.79	0.65	−.02	−.20	.11	−.27†								
6. National union size	0.83	1.14	−.14	−.12	.68***	−.17	.23							
7. Average local size	5.21	4.06	−.23	−.19	.23	.01	.23	.25†						
8. Industrial diversity	2.60	1.95	−.14	−.12	.66***	−.39**	.04	.68***	.32*					
9. Membership heterogeneity	1.55	0.61	.15	.26†	.11	−.14	−.01	.17	.10	.29*				
10. Environmental complexity	0.11	0.61	−.50***	−.27†	−.01	.30*	.24†	.15	.05	−.09	−.14			
11. Environmental munificience	0.09	0.40	−.18	−.06	−.14	.19	.25†	.17	−.14	−.27†	−.35*	.62***		
12. Environmental instability	−0.12	0.26	−.20	−.24†	.00	.07	−.07	.07	−.14	.06	−.51***	.20	.28*	
13. Potential bargaining unit capacity	0.01	0.64	.17	.31*	.15	−.13	−.09	.22	.19	.35*	.08	−.34*	−.26†	−.05

[a] $N = 50$.
† $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$
All two-tailed tests

letion for missing data yielded substantively identical results for the relationships among the dependent variables.)

The correlational analysis also revealed associations among the exogenous variables. The largest coefficients were for the relationships between size and industrial diversity ($r = .68$, $p < .001$), environmental complexity and environmental munificence ($r = .62$, $p < .001$), and membership heterogeneity and environmental instability ($r = -.51$, $p < .001$), but several correlations were in the .30 to .40 range. Many of these correlations support the general validity of our approach (e.g., one would expect unions with munificent primary jurisdictions to exhibit less industrial diversity), but multicollinearity may have influenced the precision of our multivariate parameter estimates (below) in a few instances.

Table 2 reports the multivariate estimates. Given the directional nature of our hypotheses, we used one-tailed significance tests to evaluate the parameter estimates. Support was found for several hypotheses. Consistent with Hypothesis 1, environmental complexity in the primary jurisdiction had a negative impact on centralized control within national unions. Among the remaining predictors, only the average local union size coefficient carried the expected sign (Hypothesis 5) and achieved standard levels of statistical significance. A test of the joint hypothesis that the three nonsignificant union characteristic coefficients would all equal zero (recall that size and industrial diversity are fairly highly correlated) could not be rejected at standard levels of statistical significance ($F_{3, 44} = 1.53$, $p > .22$). Thus, the decision to centralize authority at the national union level seems to be largely the result of environmental factors (i.e., complexity), not of internal characteristics.

Results for the administrative structural differentiation and administrative rationalization equations suggest that they are the products of different processes. The parameter estimates supported the notion that administrative structural differentiation is reduced by environmental munificence (Hypothesis 13a) and enhanced by industrial diversity (Hypothesis 10a) and national union size (Hypothesis 9a). In contrast, administrative rationalization was reduced by industrial diversity (Hypothesis 10b) and enhanced by environmental complexity (Hypothesis 11b). A test of the joint hypothesis that the two standardized regression equations (not reported in the table) are equal could be rejected ($F_{5, 223} = 9.34$, $p < .001$).

Consistent with Hypothesis 6, centralized control exhibited a positive influence on representative structures. Where decision making is vested at high levels, members demand more elaborate national union structures to influence decision makers. The results for the potential bargaining unit capacity variable supported our contention that democracy is a normal good and that workers' demand for democracy is related to their ability to participate in decisions (Hypothesis 7). In contrast, we found no support for the view that membership heterogeneity enhances representative structures.

Results for the concentration-of-decision-making equation were poor. Only national union size had a coefficient in excess of its standard error, but

TABLE 2
Results of Regression Analyses

Independent Variables	Ordinary Least Squares Estimate			Two-Stage Least Squares Estimate	
	Centralized Control	Administrative Structural Differentiation	Administrative Rationalization	Representative Structures	Concentration of Decision Making
Intercept	2.69***	0.53***	4.24***	−6.32	2.86
	(0.14)	(0.17)	(0.13)	(6.06)	(3.53)
Centralized control				6.69**	
				(2.53)	
Representative structures					−0.03
					(0.04)
Administrative structural differentiation					−0.41
					(0.59)
Administative rationalization					0.14
					(0.71)
National union size	0.06	0.39***	0.07		0.32
	(0.09)	(0.11)	(0.09)		(0.25)
Average local size	−0.03†				
	(0.02)				
Industrial diversity	−0.06	0.10†	−0.13**		
	(0.05)	(0.07)	(0.05)		
Membership heterogeneity				1.53	
				(1.36)	
Environmental complexity	−0.47***	0.09	0.26*		
	(0.13)	(0.17)	(0.13)		
Environmental munificience		−0.43†	−0.25		
		(0.30)	(0.23)		
Environmental instability	−0.25	−0.03	0.15		
	(0.28)	(0.33)	(0.25)		
Potential bargaining unit capacity				1.85†	
				(1.30)	
R^2	.33	.56	.25	.26	.09

[a] Unstandardized regression coefficients are shown; standard errors are in parentheses. $N = 50$.

† $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

its sign was contrary to expectation (Hypothesis 14d). In contrast to the bivariate results, these estimates did not support the hypothesis that administrative rationalization reduces concentration of decision making (Hypothesis 14c). The estimates also failed to support our view that representative structures reduce concentration of decision making (Hypothesis 14a).

To test the hypothesis that representative and administrative structures are differentially influenced by the exogenous factors identified in our contingency approach, we respecified the model. Substituting the centralized control equation into the representative structures equation, we specified a reduced-form representative structures equation. By adding environmental munificence to the representative structures equation and membership heterogeneity, potential bargaining unit capacity, and average local size to the

administrative rationalization and administrative structural differentiation equations, we created an identical set of independent variables for the three equations of interest. Estimating the three-equation model by ordinary least squares regression analysis (results are available upon request), we tested the joint hypotheses that the coefficients produced by each of the two standardized administrative structure equations would be equal to those of the standardized representative structures equation. In both cases, the joint hypothesis that the slope coefficients were equal could be rejected ($F_{8,\ 123} = 2.55$, $p < .02$ for the comparison with the administrative rationalization equation; $F_{8,\ 123} = 6.17$, $p < .001$ for the comparison with the administrative structural differentiation equation).

Finally, we respecified the model depicted in Figure 1 to permit reciprocal influences across the representative and administrative structure variables. Two-stage least squares estimates of the parameters of interest generally failed to achieve standard levels of statistical significance (i.e., in the representative structures equation, for administrative structural differentiation, $b = -1.89$, $t = -0.98$, and for administrative rationalization, $b = 1.08$, $t = 0.22$; in the administrative structural differentiation equation for representative structures, $b = -0.05$, $t = -1.51$; in the administrative rationalization equation, for representative structures, $b = 0.01$, $t = 0.22$). Even holding other factors constant, there is little evidence to support either version of the conflict school hypothesis or the complementarity school hypothesis.

DISCUSSION

Goal formation processes are fundamental organizational characteristics. Such processes reveal much about whose interests an organization serves and the degree to which the organization depends on the consent, if not the voluntary activities, of participants to achieve basic goals. Yet even among organizations with a historic commitment to democratic principles, such as unions, there is systematic variation in both the nature and extent of formal mechanisms for member involvement in decision making. Our results suggest that rather than viewing union democracy as an end in itself, it may be useful to recognize that its optimal level is contingent on internal and external imperatives.

By identifying and contrasting the factors that influence national unions' representative and administrative structures, we have also sharpened understanding of the nature of these systems and relationships among them. Administrative structures develop in response to complexity and munificence in a union's primary jurisdiction, the number of environments in which the union operates, and the size of the union's operation, all factors that affect the need to develop implementation systems to promote effectiveness. Representative structures are largely a result of the need to centralize goal formation and simultaneously provide willing and able members with mechanisms whereby they can influence leaders and decisions. Elaboration of one structure seems to have little, if any, impact on the other.

Representative and administrative structures do not conflict and are motivated by and respond to distinct contingencies.

We can only speculate about the degree to which the union experience generalizes to other settings. The democratic tradition characteristic of many voluntary membership organizations is largely absent from other organizational types. For example, American firms' interest in employee governance is often motivated by efficiency concerns, and participation programs are typically limited to immediate workplace issues (e.g., production, job assignments). Our results suggest that the more the goals and activities of subunits are interdependent, the more representative structures are needed to achieve interunit consensus and coordination. Yet, in the United States, formal representative systems above the workplace level are uncommon and, where present, provide limited consultation rights. Managerial ideology and tradition typically confine goal reconciliation and coordination activities to the hierarchical administrative system. The lack of a democratic tradition and competition for control over goal formation may produce greater conflict between representative and administrative structures in firms than in unions.

In contrast, some European legislation promotes, if not requires, firm-level representative structures. Yet, as Bean observed, these structures do "not appear to be a sufficient condition for overcoming inequalities created by a bureaucratic organizational structure and large differences in expertise" (1985: 176). He also noted that workers tend to provide the greatest input where they "consider it in their interest and competence to do so" (1985: 176). This conclusion is broadly consistent with our finding that representative structuring varies with bargaining units' capacity to participate in decisions.

Similar differences between leader and member interests and competencies may explain our failure to find a link between representative structuring and concentration of decision making within unions. But our general inability to explain variation in the concentration of decision making suggests that our measure may fail to adequately tap the influence members and staff exert on decisions. This possibility points to a potential major limitation of efforts to apply concepts and measures used to study businesses to unions. The lack of democracy in the daily conduct of businesses has permitted a unified approach to the study of their internal structures. Measures of concentration need not contain sharp distinctions between goal formation and goal implementation because both are part of a unified hierarchical structure. In unions, however, distinct structures exist for goal formation and goal implementation. Future research on unions may benefit from clearly distinguishing systems and outcomes involving goal formation from those relating to goal implementation. For example, a refined measure of concentration in decision making on goal formation (or goal implementation) may show a more robust relationship with the extent of representative (or administrative) structuring. This potential limitation also reveals one way in which the study of unions may contribute to organizational science. Studying or-

ganizations with unique features stimulates questions about the generality of traditional organizational science concepts and measures.

Despite this potential limitation, our results illustrate the value of integrating the organizational science and industrial relations literatures. In so doing, we not only identified factors that influence union administrative structures, but also saw factors that influence representative structures—a feature less salient in the organizations typically studied by organizational scientists. Whether other organizational science paradigms are superior to the contingency approach is beyond the scope of this article, but our results suggest that these structures are systematically related to other union attributes and environmental characteristics as conceptualized by organizational scientists. We hope this work encourages organizational science and industrial relations scholars to further integrate these two literatures.

REFERENCES

Aldrich, H., Staber, U., Zimmer, C., & Beggs., J. J. 1990. Minimalism and organizational mortality: Patterns of disbanding among U.S. trade associations, 1900–1983. In J. V. Singh (Ed.), ***Organizational evolution: New directions:*** 21–52. Newbury Park, CA: Sage.

Barbash, J. 1967. ***American unions: Structure, government and politics.*** New York: Random House.

Bean, R. 1985. ***Comparative industrial relations: An introduction to cross-national perspectives.*** London: Routledge.

Blau, P. M. 1973. ***The organization of academic work.*** New York: Wiley Interscience.

Bok, D. C., & Dunlop, J. T. 1970. ***Labor and the American community.*** New York: Simon & Schuster.

Bollen, K., & Lennox, R. 1991. Conventional wisdom on measurement: A structural equation perspective. ***Psychological Bulletin,*** 110: 305–314.

Boyd, B. 1990. Corporate linkages and organizational environment: A test of the resource dependence model. ***Strategic Management Journal,*** 11: 419–430.

Burns, T., & Stalker, G. M. 1961. ***The management of innovation.*** London: Tavistock.

Child, J., Loveridge, R., & Warner, M. 1973. Toward an organizational study of trade unions. ***Sociology,*** 17: 71–91.

Colgate, C. 1989. ***National trade and professional associations of the United States directory.*** Washington, DC: Columbia Books.

Curme, M. A., Hirsch, B. T., & Macpherson, D. A. 1990. Union membership and contract coverage in the United States, 1983–1988. ***Industrial and Labor Relations Review,*** 44: 5–33.

Daft, R. L. 1986. ***Organization theory and design*** (2nd ed.). St. Paul: West.

Daft, R. L., & Bradshaw, P. J. 1980. The process of horizontal differentiation: Two models. ***Administrative Science Quarterly,*** 25: 441–456.

Dess, G. G., & Beard, D. W. 1984. Dimensions of organizational task environments. ***Administrative Science Quarterly,*** 29: 52–73.

Donaldson, L., & Warner, M. 1974. Bureaucratic control in occupational interest associations. ***Sociology,*** 8: 47–57.

Duncan, R. B. 1972. Characteristics of organizational environments and perceived environmental uncertainty. ***Administrative Science Quarterly,*** 17: 313–327.

Edelstein, J. D., & Warner, M. 1976. ***Comparative union democracy: Organization and opposition in British and American unions.*** London: Halstead.

Fiorito, J., & Jarley, P. 1992. Associate membership programs: Innovation and diversification in national unions. ***Academy of Management Journal,*** 35: 1070–1085.

Fiorito, J., Jarley, P., & Delaney, J. T. 1995. National union effectiveness in organizing: Measures and influences. ***Industrial and Labor Relations Review,*** 48: 613–635.

Georgopoulos, B. S., & Mann, F. C. 1962. ***The community general hospital.*** New York: Macmillan.

Gifford, C. D. 1990. ***Directory of U.S. labor organizations: 1990–1991.*** Washington, DC: Bureau of National Affairs.

Hage, J., & Aiken, M. 1967. Relationship of centralization to other structural properties. ***Administrative Science Quarterly,*** 12: 72–91.

Hendricks, W. E., Gramm, C., & Fiorito, J. 1993. Centralization of bargaining decisions in American unions. ***Industrial Relations,*** 32: 367–390.

Hirsch, B. T., & Berger, M. C. 1984. Union membership determination and industry characteristics. ***Southern Economic Journal,*** 50: 665–679.

Hirsch, B. T., & Macpherson, D. A. 1992. Union membership and coverage files from the Current Population Survey: Note. ***Industrial and Labor Relations Review,*** 46: 574–578.

James, L. R. 1982. Aggregation bias in estimates of perceptual agreement. ***Journal of Applied Psychology,*** 67: 219–229.

Keats, B. W., & Hitt, M. A. 1988. A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. ***Academy of Management Journal,*** 31: 570–598.

Kimberly, J. R. 1976. Organizational size and the structuralist perspective: A review, critique, and proposal. ***Administrative Science Quarterly,*** 21: 571–597.

Knoke, D. 1990. ***Organizing for collective action: The political economies of associations.*** New York: de Gruyter.

Kochan, T. H. 1980. ***Collective bargaining and industrial relations: From theory to policy and practice.*** Homewood, IL: Irwin.

Kochan, T. H., & Wever, K. R. 1991. American unions and the future of worker representation. In G. Strauss, D. G. Gallagher, & J. Fiorito (Eds.), ***The state of the unions:*** 363–386. Madison, WI: Industrial Relations Research Association.

Lawrence, P. R., & Lorsch, J. W. 1967. ***Organization and environment: Managing differentiation and integration.*** Boston: Graduate School of Business Administration, Harvard University.

Lazear, E. P. 1983. A microeconomic theory of labor unions. In J. Reid (Ed.), ***Research in labor economics: New approaches to labor unions,*** vol. 2 (supplement 2): 53–96. Greenwich, CT: JAI Press.

Lahne, H. J. 1970. Union constitutions and collective bargaining procedures. In J. Seidman (Ed.), ***Trade union government and collective bargaining:*** 167–195. New York: Praeger.

Ledford, G. E., & Lawler, E. E., III. 1994. Research on employee participation: Beating a dead horse? ***Academy of Management Review,*** 19: 633–636.

Lester, R. 1958. ***As unions mature.*** Princeton, NJ: Princeton University Press.

Lincoln, J. R., & Zeltz, G. 1980. Organizational properties from aggregate data: Separating individual and structural effects. ***American Sociological Review,*** 45: 391–408.

Lipset, S. M., Trow, M., & Coleman, J. 1956. ***Union democracy.*** Glencoe, IL: Free Press.

Markham, W. T., Bonjean, C. M., & Corder, J. 1984. Measuring organizational control: The reliability and validity of the control graph approach. ***Human Relations,*** 37: 263–294.

Masters, M. M., Delaney, J. T., & Fiorito, J. 1988. The effects of union organizational and environmental characteristics on union political action. ***American Journal of Political Science,*** 32: 616–642.

Michels, R. 1959. ***Political parties.*** Glencoe, IL: Free Press.

Mintzberg, H. 1979. ***The structuring of organizations: A synthesis of research.*** Englewood Cliffs, NJ: Prentice-Hall.

Oldham, G. R., & Hackman, J. R. 1981. Relationships between organizational structure and employee reactions: Comparing alternative frameworks. ***Administrative Science Quarterly,*** 26: 66–83.

O'Reilly, C. A., III, & Roberts, K. H. 1976. Relationships among components of credibility and communication behaviors in work units. ***Journal of Applied Psychology,*** 1: 99–102.

Price, J. L., & Mueller, C. W. 1986. ***Handbook of organizational measurement.*** Cambridge, MA: Ballinger.

Rumelt, R. P. 1974. ***Strategy, structure, and economic performance.*** Boston: Graduate School of Business Administration, Harvard University.

Scott, W. R. 1987. ***Organizations: Rational, natural, and open systems*** (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Seeber, R. L. 1984. ***The expansion of national union jurisdictions.*** Unpublished manuscript, New York State School of Industrial and Labor Relations, Ithaca.

Stinchcombe, A. L. 1965. Social structure and organizations. In J. G. March (Ed.), ***Handbook of organizations:*** 142–193. New York: Rand McNally.

Strauss, G. 1991. Union democracy. In G. Strauss, D. G. Gallagher, & J. Fiorito (Eds.), ***The state of the unions:*** 201–236. Madison, WI: Industrial Relations Research Association.

Strauss, G. 1993. Issues in union structure. In S. Bacharach, R. Seeber, & D. Walsh (Eds.), ***Research in the sociology of organizations: Special issue on labor relations and unions,*** vol. 12: 1–50. Greenwich, CT: JAI Press.

U.S. Bureau of Census. Various years. ***County business patterns: Employment and taxable payrolls, number and employment size of reporting units by industry group.*** Washington, DC: U.S. Government Printing Office.

U.S. Bureau of Labor Statistics. 1980. ***Directory of national unions and employee associations, 1979.*** Bulletin 2079. Washington, DC: U.S. Government Printing Office.

U.S. Department of Commerce, Bureau of Economic Analysis. 1992. ***National income and product market accounts of the United States: Volume 2, 1959–1998.*** Washington, DC: U.S. Government Printing Office.

Weber, M. 1968. ***Economy and society: An outline of interpretive sociology*** (G. Roth & C. Wittich, Eds.). New York: Bedminster Press.

Withey, M., Daft, R. L., & Cooper, W. H. 1983. Measures of Perrow's work unit technology: An empirical assessment and a new scale. ***Academy of Management Journal,*** 26: 45–63.

APPENDIX

Measures

A. Union Characteristics

Responses to the following items were used to construct the measures of union characteristics reported in Table 1. To limit respondent burden and interview length, most scales were

abbreviated forms of longer scales. Many of the scales were adapted from those suggested by Price and Mueller (1986). Some items and framing statements were modified for use with unions on the basis of discussion with union officials and the authors' judgment.

Because individual responses to the National Union Survey (NUS) items were aggregated to form national union measures, we report interrater reliability coefficients for composite measures. We standardized all items prior to forming multi-item indices. Our constructs are best described as organizational characteristics, making the reliability of the means the appropriate statistic (James, 1982). We report two measures. The R^2 measure is comparable to the η^2_2 metric discussed by James (1982: 225). It gives the proportion of the variance in individual responses accounted for by differences in national unions. The second measure is ICC(2) (James, 1982: 222). This metric is calculated from the same regressions (i.e., one-way ANOVAs) used to calculate our R^2 measures. Where a measure included responses to NUS items as well as information from archival sources, interrater reliability was assessed exclusively on the NUS items.

1. *Centralized control* is a 14-item index based on responses to the NUS as well as information from union constitutions (R^2 = .56, ICC[2] = .53, α = .79). The NUS framing statement and items were adapted from Markham, Bonjean, and Corder (1984). Archival measures were based on Lahne (1970).

Framing statement: Now I'm going to read a list of union activities. After I read each one, I will also read a list of groups within your union. For each activity, please tell me which group has the most say or influence within your union. Items: (1) Organizing new members, (2) bargaining with employers, (3) national politics/legislation, (4) state & local politics/legislation, (5) community service, (6) strike decisions, and (7) overall. (Responses: 1 = executive board, 2 = top national officers, 3 = national staff, 4 = regional or district officers or staff, 5 = local officers and staff, 6 = rank-and-file members.)

Items from union constitutions: Which level of the union has control over: (8) negotiations, (9) formulation of bargaining demands, (10) strike initiation, (11) decisions to terminate strikes, and (12) negotiating personnel. (Codes: 1 = locals or not specified, 2 = regional & local, 3 = regional, national, & local, 4 = national & regional, 5 = national.) Whether the national union must approve: (13) contracts and (14) local bargaining demands. (Codes: 0 = no, 1 = yes.)

2. *Representative structures* is a 13-item index based exclusively on union constitutions. It tapped two key dimensions of democratic structure: (1) the degree to which members participated in or had direct influence over union decisions and leaders and (2) the degree of independent countervailing sources of power within the union (α = .63). Measures were based on Lahne (1970) and theoretical arguments advanced by Strauss (1991).

Items: (1) Years between national conventions, (2) years between national elections (coded 1–5), and (3) whether national officials are elected by convention or referendum (codes: 0 = convention, 1 = referendum); whether the constitution (4) requires strike authorization votes by members, (5) requires that all members vote on proposed constitutional changes, (6) requires local membership votes to ratify contracts, (7) makes union officers and staff automatic delegates to union convention, (8) permits union officers and staff to be appointed or stand in for nonattending convention delegates, (9) permits an individual to hold multiple national union offices simultaneously, (10) allows an individual to hold national and local union office simultaneously, (11) allows the membership to recall national union officers, (12) provides for membership-initiated binding referendums, and (13) states that executive board members are full-time employees of the union. (Codes: 0 = no, 1 = yes; items 1, 2, 7, 8, 9, and 10 were reverse-coded for the composite measure.)

3. *Administrative structural differentiation* is a 5-item index comprised of NUS items and archival data that emphasize the degree of departmentalization, divisionalization, and functional specialization within a union (α = .71). The NUS framing statement, items, and archival measures were based on Rumelt (1974).

Framing statement: The following questions ask about how your union is structured. Items: (1) Does this union have special national-level units (for example, departments) other than locals for particular *constituents* such as those in particular regions, occupations, or industries?, (2) Does this national union have any intermediate bodies between the national and the local? (Responses: 0 = no, 1 = yes.)

From archival sources: (3) The number of intermediate units for most recent reporting year as reported on U.S. Department of Labor LM-2 Form data tapes, (4) the number of departments listed for each union as reported in Gifford (1990), and (5) the number of staff as reported by Colgate (1989). Where a range was reported, the midpoint was used.

4. *Administrative rationalization* is a 9-item index made up of exclusively of NUS items that assess four areas: standardization, formalization, communication, and coordination (R^2 = .53; ICC[2] = .56, α = .65). The framing statements and items for the four areas were respectively adapted from Withey, Daft, and Cooper (1983), Oldham and Hackman (1981), O'Reilly and Roberts (1976), and Georgopoulos and Mann (1962).

Framing statement: The following statements pertain to the normal, usual, day-to-day pattern of work carried out by staff and officers in this union. For each statement, please tell me how accurately the statement describes your organization. Items: (1) There is a clearly known way to do the major types of work normally encountered. (2) Our work can be done using established procedures and practices. (Responses: 1 = very inaccurate; 2 = inaccurate, 3 = uncertain, 4 = accurate, 5 = very accurate.)

Framing statement: To provide a general index of the "climate" of your union, please respond to each of the following statements by telling me how accurately it describes your organization. Items: (3) This union has a very small number of written rules and policies. (4) There is a complete written job description for most jobs in this union. (5) There is a formal orientation program for most new staff members of this union. (Responses: 1 = very inaccurate, 2 = inaccurate, 3 = uncertain, 4 = accurate, 5 = very accurate; item 3 was reverse-coded for the composite measure.)

Framing statement: The following statement may or may not be descriptive of communication among officers and staff in your union. As I read each statement, please decide to what extent you agree that it applies to your union. Items: (6) It is easy to talk openly with officers and staff in this union. (7) I sometimes feel that other officers and staff don't understand the information they receive. (Responses: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree; item 7 was reverse-coded for the composite measure.)

Framing statement: The following questions ask about how different activities in your national union fit together with one another. Items: (8) How well planned are the work assignments of the staff and officers from the different departments who work together? (responses: 1 = extremely well planned, 2 = very well planned, 3 = fairly well planned, 4 = not so well planned, 5 = not at all well planned). (9) In this union, how well organized or tied together are the efforts of its many groups and individuals toward providing the best possible service to members or potential members? (Responses: 1 = perfectly, 2 = very well, 3 = fairly well, 4 = not so well, 5 = not well at all. Items 8 and 9 were reverse-coded for the composite measure.)

5. *Concentration of decision making* is a 3-item index made up exclusively of NUS responses that tap the degree to which decision making is spread throughout an organization (R^2 = .44, ICC[2] = .37, α = .69). The framing statement and items were adapted from Knoke (1990).

Framing statement: How much do you agree or disagree with each of the following statements about national union decisions? Items: (1) Major policy decisions are made only after wide consultation at all levels of the union. (2) Power over major policy decisions is concentrated in the hands of a few people. (3) Leaders of this national union sometimes make decisions that have little support from the rank and file. (Responses: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree; item 1 was reverse-coded for the composite measure.)

6. *National union size* is a 3-item index that taps the scope of operations and internal resources of the union ($\alpha = .92$). The NUS item and archival measures were based on Kimberly (1976).

NUS item: (1) Roughly how many members does this union currently represent?

From archival sources: (2) Total assets and (3) total dues receipts both as reported by LM-2 Form data tapes (three-year average, 1988–90).

7. *Average local size* taps the human resource and political capacity of local unions. It is the natural logarithm of average local size, which is membership as reported in NUS, divided by the number of locals as reported by Gifford (1990). The measure was based on Hendricks, Gramm, and Fiorito (1993).

8. *Industrial diversity* is a 2-item index that assesses the breadth of two-digit SIC industries in which a union actively sought members from 1986 through 1990. The archival measure was based on Fiorito, Jarley, and Delaney (1995).

From archival sources: (1) the number of SIC industries in which the union sought at least one NLRB election, and (2) the proportion of all NLRB elections held in the four SIC industries where the union petitioned for the greatest number of NLRB elections, both as reported by the U.S. National Labor Relations Board Certification Election data tapes. (Item 2 was reverse-coded for the composite.)

9. *Membership heterogeneity* is a 3-item index that assesses diversity in membership characteristics ($R^2 = .88$, ICC(2) = .73, $\alpha = .49$). Items and measure were based on Masters, Delaney, and Fiorito (1988).

Framing statement: What percentage of your national union is: (1) female, (2) minority, and (3) employed in "white collar" occupations (e.g., clericals, professionals, sales, administration, etc.)

Heterogeneity = $[f^*(1- f)]/s_f + [m^*(1- m)]/s_m + [wc^*(1- wc)]/s_{wc}$, where f = proportion female, m = proportion minority, wc = proportion white-collar, and s = the standard deviation of the respective numerator. This measure takes its highest value in a union where female, minority, and white-collar membership each equals 50 percent.

B. Union Environments

We constructed the environmental measures from a variety of archival sources following procedures pioneered by Dess and Beard (1984) and Keats and Hitt (1988). Data by two-digit SIC industry were collected for five years, 1983–87. A five-year period was chosen because it is comparable in length with periods used in studies of businesses. The 1983–87 time frame assumes a lag between environmental change and structural response and is centered on a period of rather intense self-examination within the labor movement. It is also a period for which data are consistently reported using the same industry classification scheme. The resulting measures were mapped to national unions using information that identified the two-digit industry in which each national union had the greatest percentage of its members as of 1980. Again, we standardized all items prior to forming multi-item indices.

10. *Environmental complexity* is a 5-item index that taps environmental heterogeneity and its associated information-processing demands ($\alpha = .76$). Archival measures were based on Dess and Beard (1984), Keats and Hitt (1988), and Boyd (1990).

Items: (1) mean number of establishments, (2) mean number of employees, (3) regional dispersion in industrial production (for information on the procedure used, see Dess and Beard [1984: 72]), and (4) regional dispersion in employment (calculated using same procedure as noted for item 3). Measures were all based on U.S. Bureau of the Census data. (5) Percentage of workers not covered by a collective bargaining agreement as estimated by Current Population Survey data (cf. Curme, Hirsch, & Macpherson, 1990; Hirsch & Macpherson, 1992).

11. *Environmental munificence* is a 7-item index that assesses the availability of external resources to support growth (α = .60). Using annual figures for each two-digit industry, we followed a procedure outlined by Keats and Hitt (1988: 596–597) to calculate a smoothed measure of average growth over the five years. Archival measures were based on Dess and Beard (1984), Keats and Hitt (1988), and Boyd (1990).

Items: (1) Industry gross domestic product, (2) industry average total compensation per full-time employee, and (3) industry average value-added per full-time employee, as reported by the U.S. Department of Commerce (1992), (4) total number of establishments, (5) total number of employees, and (6) average number of employees per establishment, as reported by the U.S. Bureau of the Census (various years), and (7) the percentage of employees covered by a collective bargaining agreement as reported by the Current Population Survey (see measure 10, item 5).

12. *Environmental instability* uses the same 7 items to create an index that assesses the degree of unexpected change in an environment (α = .71). The measure uses the antilogarithms of the standard errors as discussed by Keats and Hitt (1988). This measure is scaled to allow similar scores for union environments that present similar patterns but start out at different base levels. Archival measures were based on Dess and Beard (1984), Keats and Hitt (1988), and Boyd (1990).

13. *Potential bargaining unit capacity* is a 3-item index designed to capture the extent to which a primary jurisdiction can generate locals with members who are capable of effectively participating in democratic decision making (α = .72). We developed these measures.

Items were: (1) average compensation per employee, (2) average annual wages per employee as reported by U.S. Department of Commerce (1992), and (3) average employment per establishment as reported by the U.S. Bureau of the Census (various years).

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ORGANIZATIONAL DRESS AS A SYMBOL OF MULTILAYERED SOCIAL IDENTITIES

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Qualitative data collected in a rehabilitation unit of a large hospital reveal how organization members used dress to represent and negotiate a web of issues inherent to the hybrid identities of the unit and the nursing profession. As different issues were considered, dress took on various and often contradictory meanings. Thus, a seemingly simple symbol such as organizational dress is shown here to reveal the complex notion of social identity, which is argued to comprise multiple layers of meaning. We discuss the implications of this thesis for theory and research on organizational identity, organizational symbolism, organizational dress, and ambivalence.

> Patients who wear pajamas, and see hospital garb around them think of themselves as sick. If *they and their caretakers wear street clothes,* patients will think of themselves as moving out of the sick role, and into rehabilitation. They will be ready for life outside the hospital. This is the rehab philosophy, and this is what makes this unit unique.
>
> Head nurse of a rehabilitation unit; emphasis ours

> We are medical and health professionals. We do professional work. We take care of sick patients, we deal with their bodily fluids, and get their slime all over us. So we should all look like medical professionals, *we should be dressed in scrubs.*
>
> Nurse on the evening shift of the same unit; emphasis ours

These two women both work on the same hospital rehabilitation (rehab) unit. Yet their portrayals of who they are and whom they care for are as dramatically different as the dress each proposes to wear. In this article, we focus on the role that dress served for members of this organization. We

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argue that these descriptions of "appropriate" attire were not incidental; rather, our analysis suggests that dress served as a symbol that facilitated the organization and discussion of multiple issues relating to a central question: Who are we as nurses on this unit? That is, dress served as a convenient and useful window allowing members of the organization to look at the multiple and competing *social identities* inherent to their organization (Albert & Whetten, 1985; Dutton & Dukerich, 1991; Tajfel & Turner, 1985). Social identities, broadly defined, refer to those self-categorizations that individuals use to denote their sense of belonging (i.e., identification) with particular human aggregates, or groups (Ashforth & Mael, 1989; Tajfel & Turner, 1985). Social identities help individuals answer the question, Who am I?, by delineating the social groups in which they are members.

Building on an in-depth case study of a debate about organizational dress, in this article we develop the thesis that the symbol of dress, in itself vivid, visible, yet seemingly simple, offers a useful and accessible medium for disclosing conflicting organizational issues that are less easily grasped or discussed. Specifically, dress will be shown to serve as a convenient medium for representing competing perceptions of two social identities. Conversations about the differences regarding these identities, we argue, were avoided because they were stressful and arduous to sort through. A focus on dress, however, made the process of negotiating and navigating these multifaceted, or "hybrid" (Albert & Whetten, 1985), identities more manageable. The debate about the appropriateness of each form of dress therefore facilitated the conversation about issues innate to the social identity of the nurses on the unit. These issues included why the nurses were there (their mission), whom they served (their clients), what services they provided (their roles), how they were to be seen in the medical hierarchy (their status), and who should be making key decisions regarding the organization (decision making).

These findings are explained and elaborated in the latter part of this article. We begin, however, by briefly outlining the theoretical edifice upon which our analysis is built. Specifically, we provide an overview of current theory and research on symbols in organizations, especially as they relate to organizational dress, and we review what is known about the relationship between symbols and the concepts of culture and social identity. The report of our methods and findings in the latter part of the article then illustrates and supports the thesis *that conflicts over dress can symbolize and help negotiate a complex set of issues that represent multiple and conflicting social identities.*

THEORETICAL BACKGROUND

Organizational Symbolism, Organizational Identity, and Organizational Dress

Scholars in a variety of disciplines, including anthropology, sociology, psychology, and the humanities, have contributed to the long intellectual

history of the study of symbols (Geertz, 1973; Goffman, 1959; Linstead & Grafton-Small, 1992; Manning, 1987). In this body of literature, the term "symbol" has included any "thing" (an event, object, relationship, etc.) that conveys meaning. A more recent stream of research has adopted a narrower focus on the role of symbols in creating and maintaining meanings in organizations (cf. Dandridge, 1983; Dandridge, Mitroff, & Joyce, 1980; Ornstein, 1986; Pfeffer, 1981a; Pondy, Frost, Morgan, & Dandridge, 1983; Rosen, 1985; Trice & Beyer, 1984, 1993). This stream of research, known as the study of organizational symbolism, encompasses examinations of artifacts, language, metaphors, dramaturgy, rites and rituals, stories, and myths (cf. Abravanel, 1983; Clark, 1972; Martin, Feldman, Hatch, & Sitkin, 1983; Mitroff & Kilmann, 1976; Pondy, 1983; Smircich, 1983; Trice & Beyer, 1984, 1993).

Trice and Beyer (1993: 86) attempted to disentangle the various meanings of the term and suggested that organizational symbols are specific "cultural forms" that are distinct from organizational language, narratives, and practices. They further proposed that there are three distinct types of symbols: objects, settings, and performers. Using this typology, we focus in this article on *object symbols.* Trice and Beyer specifically emphasized that object symbols are context specific, which implies that the meaning of a symbol depends on the context in which it appears. The meaning of a symbol within one organization, therefore, may differ from its meaning in a different organization or at a different place or time in the same organization.

Researchers have proposed that organizational culture is often the context in which the meaning of a symbol is "enacted," because culture defines the shared frame of reference that typifies organizations and guides members' perceptions and behavior (Bate, 1990; D'Andrade, 1984; Louis, 1983; Schein, 1985; Trice & Beyer, 1993). The literature on organizational culture suggests two dynamics that relate organizational symbols and culture. To begin, symbols have been argued to be cultural forms, or vehicles, for the enactment of an organizational culture. At the same time, cultures are argued to be the assumptions, or the frames, that determine the meaning of symbols (cf. Dandridge et al., 1980; Ornstein, 1986; Pfeffer, 1981a; Pondy et al., 1983; Rosen, 1985). Schein (1990), for example, referred to tangible object symbols, or "artifacts," as the first "level" of culture (cf. Hatch, 1993).

Past researchers addressing the symbol of organizational dress have viewed dress as a symbol of a concept related to an organization's culture: organizational identity[1] (e.g., Rafaeli & Pratt, 1993). According to Hatch (1993), organizational identity beliefs are grounded in cultural assumptions and values, but they specifically involve only those characteristics that are seen as self-defining. That is, dress as a symbol can be expected to reflect those organizational characteristics that refer to the question, Who am I?, or

[1] We adopt the perspective taken by Hatch (1993) and others that organizational identity is narrower than organizational culture and specifically refers to self-defining values and beliefs. We recognize that this assertion is still somewhat controversial. The debate between identity and culture, however, is outside of the scope of this work.

those characteristics that are believed to be central, enduring, and distinct (Albert & Whetten, 1985; Ashforth & Mael, 1996; Dutton & Dukerich, 1991; Dutton, Dukerich, & Harquail, 1994). However, others have argued that dress and other symbols symbolize different social identities, such as professional or gender identities (Davis, 1992; Pratt & Dutton, 1996). What is therefore unclear is how multiple identities play out in the context of one symbol in one organizational setting.

Dress and Its Organizational Functions: A Brief Review

Although recent treatments of organizational dress have often been relegated to discussions about "dressing for success" (cf. Cho & Grover, 1978; Levitt, 1981; Molloy, 1975, 1977; Solomon, 1986, 1987; Solomon & Douglas, 1983), the study of dress and its role in corporate and other social organizations has a long and distinguished history (cf. Becker, Greer, Hughes, & Strauss, 1961; Goffman, 1959; Simmel, 1971; Singer, Brush, & Lublin, 1965; Stone, 1962; Veblen, 1899). Organizational dress comprises the clothing (e.g., jacket, skirt, pants) and artifacts (e.g., name tag, smock, jewelry) that employees of an organization wear while at work (Rafaeli & Pratt, 1993). As Rafaeli and Pratt (1993) noted in their review of the meaning and impact of this symbol, organizational dress serves two key functions: it asserts control, and it conveys identity (cf. Davis, 1992; de Marley, 1986; Forsythe, 1990; Forsythe, Drake, & Cox, 1985; Fussell, 1983; Joseph, 1986; Joseph & Alex, 1972; Lurie, 1981; Ribeiro, 1986; Roach-Higgins & Eicher, 1992; Solomon & Douglas, 1987; Squire, 1974).

First, organizational dress is a *mechanism* for asserting organizational control (Joseph, 1986; Lurie, 1981). Thus, issues of organizational versus individual control often underlie issues of dress. As Lurie stated, individual control is usurped any time an organization dictates an individual's dress: "No matter what sort of uniform it is—military, civil, or religious . . . to put on such livery is to give up one's right to act as an individual. . . . What one does, as well as what one wears, will be determined by external authorities" (1981: 18).

Hochschild's (1983) work on flight attendants, Kanter's (1972) work on communes, and Joseph's (1986) work on uniforms additionally indicate a connection between strong organizational control over dress codes (e.g., through uniforms) and members' increased compliance with a wide range of organizational rules. Rafaeli and Pratt (1993) attempted to explain the link between control over dress and member compliance by drawing upon theories of "deindividuation," role theory, and cognitive dissonance. They concluded that compliance can be obtained by making all members dress similarly or conspicuously, in a way that is markedly different from how nonmembers dress. To illustrate, the conspicuous dress of medical professionals has long been used to reveal hierarchical distinctions and to enforce control. Becker and colleagues vividly described this process: "On their very first day medical students put on white, the color symbolic of modern medicine. For the rest of their lives they will spend a good many hours of every day among

people who wear uniforms, more often white than not, which tell the place of each in the complicated division of work and the ranking system of the medical world" (1961: 4). These associations between attire and control are taught to medical professionals through formal and informal means at very early stages of their medical socialization (Becker et al., 1961; Janowski, 1984).

Our study continues this research on dress and control by illustrating how a debate about what to wear revealed a power struggle on the unit that was this study's setting. However, instead of taking a solely managerial perspective and focusing on how managers manipulate dress to increase compliance, we examined how both managers and employees attempted to assert control in an organization by advocating a particular dress code. We also illustrate how acceptance of a particular dress code conveyed more than simple adherence to organizational rules, by showing how a debate about dress symbolized a conflict over social identities.

Second, and perhaps better documented, dress is a powerful symbol of the core and distinctive values and beliefs of an organization (Becker et al., 1961; Cialdini, Borden, Thorne, Walker, Freeman, & Sloan, 1976; Davis, 1992; Fussell, 1983; Goffman, 1959; Hall, Lamb, & Perlmutter, 1982; Joseph, 1986; Lurie, 1981; Solomon & Douglas, 1983, 1987). This assertion has been supported both in the popular press and in theory and research on organizational culture and symbolism (cf. Trice & Beyer, 1993).

There are also strong connections between dress and core aspects of various professions (cf. Abbott, 1988; Campbell-Heider & Hart, 1993), especially medical professions. Becker, Greer, Hughes, and Strauss (1961) and others have noted that medical professionals adopt and endorse white uniforms because white represents cleanliness and sterility. Similarly, Bishop suggested that medical professionals have donned distinctive dress for centuries: "There is abundant evidence to show that the costume of the physician in the past has been, generally speaking, of such a distinctive character as to proclaim its wearer as a follower of the healing art. This peculiarity of costume dates back to the time when the roles of the magician, of the priest, and of the physician were united" (1934: 193).

The attire of nurses has been a particularly powerful symbol of their professional identity. As Siegel noted: "The uniformed appearance of the nurse has become so interwoven with her identity that it is probably difficult, if not impossible, for anyone to conceptualize 'nurse' without automatically including her symbolic attire" (1968: 314).

The attire traditionally associated with nurses is a white uniform with a white cap, an outfit reminiscent of the "Nightingale era" (Siegel, 1968). The most distinctive part of nurses' uniforms has been their color: white. According to Siegel, this color symbolizes many meanings, including "purity, meticulousness, crispness, glamour, serenity, efficiency, sterility, fear, coldness, comfort, confidence, science, laboratory, health, illness, emergency, surgery, isolation, and so forth" (1968: 315). The styles of these uniforms have tended to be conservative and functional (for instance, they have large

pockets for carrying supplies and well-tailored sleeves that will not dip into patients' food), and they are made of durable fabrics that withstand several washings (cf. Nerone, 1986; Siegel, 1968).

Traditional nursing uniforms have also tended to be both homogeneous and conspicuous. In other words, all nurses wore similar attire, and they wore attire that clearly distinguished them from those who were not nurses (cf. Rafaeli & Pratt, 1993). Today, however, nursing attire is neither homogeneous nor conspicuous. Although many nurses continue to wear white uniforms, there has been, since the beginning of the 1960s, a trend against the exclusive use of traditional whites. Nurses may now be found wearing a variety of medical and other attire while at work, including surgical scrubs, lab coats, colored smocks and tunics, and even street clothes (cf. Gardner & Simkins, 1976; Janowski, 1984; Pisker & Vigiano, 1988; Siegel, 1968; Stubbs, Buckle, Hudson, Butler, & Rivers, 1985). Street clothes, in particular, are often worn in pediatric, psychiatric, and rehabilitation units (Gardner & Simkins, 1976; Goodstein, 1981; Lavender, 1987; Petrovich, Bennet, & Jackson, 1968; Pisker & Vigiano, 1988; Trauer & Moss, 1980).[2]

As the quotes that open this article suggest, different participants in the present study saw dress as symbolizing different and sometimes conflicting social identities. Our data suggest that such disagreements were inherent to the organization we studied. In light of such data, we view this study as extending previous work that implies a connection between dress and core organizational values in three ways. First, we explicitly argue that dress serves as a key symbol not only of core values, but also of the more fundamental notion of organizational identity. In the emerging stream of research on the topic of organizational identity (Albert & Whetten, 1985; Ashforth & Mael, 1996; Dutton & Dukerich, 1991), there is little work on how identity is represented through organizational symbols such as dress. Our focus on object symbols can be contrasted with the focus in other explorations of identity on *substantive management* (Ashforth & Mael, 1996). The latter examine the interplay between identity and strategic managerial action, such as the adoption of new technologies, routines, or public policies (cf. Dutton & Dukerich, 1991).

Second, we offer *empirical* insights about identity theorists' claims that organizations can consist of multiple and sometimes competing identities (Albert & Whetten, 1985; Ashforth & Mael, 1996). There are recent claims in the organizational culture literature that cultures can be viewed as differentiated or fragmented (Martin, 1992; Meyerson & Martin, 1987); similarly, there is growing recognition among identity researchers that organizations

[2] This trend toward more and varied types of dress has met with considerable debate. Some nurses view the movement away from the traditional white uniform, which they see as symbolic of servitude, as a sign of newfound professional autonomy and confidence (cf. Janowski, 1984; Levine, 1988; Siegel, 1968). Other nurses assert that only by reassuming the traditional white uniform can they attain the professional self-esteem, respect, and appreciation they—as members of a profession—deserve (Goodstein, 1981; Smith & Nerone, 1986).

and their members can have differentiated[3] (Albert & Whetten, 1985), nested (Feldman, 1979), or fragmented identities (Pratt, 1994). However, despite theoretical claims about multiple identities, empirical research on organizational identity still tends to treat it as a unified phenomenon (see, for instance, Martin's [1992] integration perspective on culture). That is, researchers have advocated a monolithic view of organizational identity (Albert & Whetten, 1985).

Similarly, there is scant theoretical or empirical research on the impact of the existence of conflicting identities within organizations. Some researchers have suggested that members may react to such contradictions with ambivalence (Ashforth & Mael, 1996; Pratt, 1993), but the present study examined more broadly the "identity negotiation" process (cf. Swann, 1987). By studying discussions and debates about dress, we gained unique insights into how members recognize and cope with competing identities.

Third, our article broadens discussions of identity in organizations to include professional identities (Abott, 1988, 1993; O'Connor & Lanning, 1992; Pratt & Dutton, 1996; Trice, 1996; Van Maanen & Barley, 1984). In the study described below, we showed how discussions about competing forms of dress made manifest the multiple and conflicting professional and organizational identities that coexisted in the organization we studied. Our findings suggest that dress can be a useful vehicle for representing and negotiating a complex web of identity-related issues that together identify a member of an organization.

METHODS

We were invited to conduct this study by a manager who was trying to decide what her employees should wear. Our collection of data was motivated by our interest in organizational dress. Yet what we found ourselves talking about was various facets of identity. To facilitate our understanding of the dynamics of dress and identity in the context we were studying, in our data collection we sought information about both the context and the perspectives of multiple constituents within this context on dress in the organization.

The Context: Rehabilitation Medical Care

The study took place in the rehabilitation unit of a large midwestern university hospital. The unit has 24 beds, all of which were occupied throughout the study. It employs 35 registered nurses (RNs) and 6 physicians full-time. Approximately 60 other professionals also come in contact with the patients and staff of the unit, including physical therapists, social workers, and administrative clerks. The same head nurse has been the unit's formal manager for 17 years. During the 8 years preceding the study, this

[3] See Albert and Whetten's (1985) discussion of ideographic and holographic hybrid identities.

head nurse had performed only managerial duties and had not worked directly with patients. The management staff of the unit includes an assistant head nurse and an education specialist, who also perform little or no actual patient care. Decision making on the unit is highly centralized.

Technically, rehabilitation begins when other forms of medical care have ended: its goal is to help patients adapt to independent life *after* having completed medical treatments. Thus, all patients in the unit had received medical treatments in another part of the hospital, had been pronounced medically stable, and were assumed ready for rehabilitation care. Rehabilitation is considered the responsibility of groups of professionals known as "rehab teams" (Stavros & Lyden, 1988). Each patient on the rehabilitation unit we observed is assigned such a team, which can include a doctor, a nurse, a psychologist, a social worker, an occupational therapist, a physical therapist, a dietitian, and the patient and his or her immediate family. The professionals in a particular patient's team are determined according to his or her medical problem and condition.

Patients' time on the unit is spent in one of two modes: interaction with various members of the rehabilitation team, which typically occurs in the mornings, and rehabilitation education and routine health care procedures such as baths and bowel programs, which typically occur in the evening. Nurses on the unit work in three shifts known as the day, evening, and night shifts. Each shift has 5–6 nurses with degrees, 2–3 practical nurses,[4] and a charge nurse who directs the operations of the shift. Nurses tend to work fixed shifts, moving infrequently. To illustrate, the charge nurse of the evening shift had been working evenings for 13 years prior to the study. Nurses on the unit play multiple roles. They act as teachers and consultants when they help patients implement the various rehabilitation strategies prescribed by the rehabilitation teams. But they also act as providers of medical care, like other nurses, when they give patients medication or help with bowel programs. Thus, like clinical social workers, rehabilitation nurses perform both a medical role and a social work role (Meyerson, 1994).

At the time of our study, the unit was experiencing various tensions emanating from both internal and external sources. A long, heated, hospital-wide strike by nurses had strained relations between nurses and hospital management. The strike had caused many nurses to leave the organization, so staffing was low. In addition, the unit was faced with an increase in the number of patients who required traditional acute medical care.[5] Thus, a relatively small number of licensed staff members had to treat a large number

[4] These are nurses who have not completed a formal nursing degree.

[5] Members of the unit disagreed about the reasons for this increase in patient acuity and about the extent to which it was a permanent rather than a temporary change. Some attributed it to seasonal changes and hence assumed the number of acutely ill patients would go down after the summer. Others argued that the situation was a result of changes in medical and insurance policies and hence assumed it was a permanent change that would not disappear.

of acutely ill patients. Consequently, the unit had hired a large number of nonlicensed and temporary nurses.

Latent and more permanent tensions also accompanied the work of nurses on the unit. Specifically, nurses had to subordinate themselves to physicians, although the latter were sometimes less experienced than the nurses were and often met with patients less frequently.[6] A social worker described these frustrations:

> Our nurses, in many cases, are in a position to know better what should go on with a patient than some of the young doctors. I saw that happen just recently. Two young women, one was a doctor and one was a nurse, disagreed at rounds about medications for the patients. The nurse in question had many years of experience and she has great confidence in her ability and so do we. The doctor has no experience on the services and lots and lots of education. The determination went to the doctor. Nobody was surprised. It's got to be really frustrating for the nurses . . . nurses often get squeezed out.

Nurses on the unit wore street clothes before and during this study, in accordance with a dress code established by the head nurse 14 years earlier (in 1975). Our study followed the course of a debate in the unit about changing this dress code. The debate was triggered by a sign that appeared in the nurses' lounge one evening. This sign asked each nurse to indicate her attitude about changing the dress code to scrubs. This sign disappeared three or four days after it was posted.[7] However, its mere appearance sparked a debate about changing nurses' dress. In trying to manage this debate, the head nurse took two steps: (1) she asked us to explore what impact a change in nurses' dress might have on the patients, and (2) she established a special "dress task force."

Our Two Roles: Researchers and "Dress Experts"

Our interaction with the organization could be construed as conducting "action research" (Barker & Barker, 1994; Bartunek, 1993; Yunker, 1994) since we took two overlapping but conceptually distinct roles. For the head nurse and members of the unit, we were experts on organizational dress who could help the unit address the question of nurses' dress. As researchers, we were trying to unravel the meanings and implications of employees' request for a change in an organizational dress code. We were particularly intrigued by the fact that employees requested a change from a permissive and heterogeneous dress code (wearing street clothes) to a restrictive and homogeneous dress code (wearing scrubs). We were puzzled that members of the unit were willingly considering a more restrictive dress code that would

[6] Such tensions are not unique to this unit (cf. Chacko & Wong, 1984; Davis, 1974; Watts, McCaulley, & Priefer, 1990).

[7] We actually never got to see this sign, and no one admitted to knowing what had happened to it.

demolish their autonomy over their dress. This request contradicted prevalent arguments in the organizational literature that employees seek greater autonomy (e.g., Pfeffer, 1981b). In our role as dress experts, we assisted members of the organization in their search for the best dress code for unit nurses. During the course of the study, we occasionally provided the members of the dress task force with what they labeled "technical assistance in doing research on the dress question." For example, we provided them with articles about nurses' attire, helped them organize a guest lecture about the history of and current trends in nurses' dress, and designed ballots that would assess modal preferences regarding dress among nurses. We also provided members of the task force with descriptive statistics that represented nurses' and patients' preferences. Toward the end of the study, we presented what we had learned to all the members of the unit. We were *not* paid by the organization for any of this work. Throughout the study, all members of the organization knew that our involvement with the unit was motivated primarily by our research interest.

Data Collection

Pursuing our role as researchers, we engaged in five distinct means of data collection:

1. Participation in the dress code task force. We participated in the ad hoc task force that was formed to find a resolution to the petition to change the dress code. All members of the task force were aware of our research interest in organizational dress and of our university affiliation with a department of organizational psychology. We recorded and transcribed all the meetings of the task force, which was chaired by the clinical nurse specialist of the unit and composed of two staff nurses, the educational specialist of the unit, the assistant to the unit's head nurse, and us. We were told that all the members of the task force had volunteered their participation. More than six weeks passed between the group's official formation and its first meeting. However, after the first meeting, the task force met more or less regularly every two to three weeks over a period of approximately four months.

2. Unstructured observations. Throughout the duration of the study, we observed the staff, the patients, and the operations of the unit. These observations helped us comprehend the nature of the work involved, as well as the interpersonal dynamics that accompanied this work. Occasionally, these observations also provided opportunities for talking to members of the unit about the dress issue. Nine such visits (three in each shift) were conducted at predetermined times to ensure observations during the early, middle, and late stages of each shift. Additional visits were conducted on a random basis. We conducted observations in a nonobtrusive manner and did not coordinate them in advance with anyone on the unit. Each observation session lasted between one and two hours.

Our presence during these observations was explained to the members of the unit in a sign posted in the nurses' lounge that announced that we might be seen around the unit because we were researchers helping the unit with the dress question. The sign invited members of the unit to approach

and talk to us about the dress issue if they were so inclined. Detailed notes about each observation were typed up after it had occurred.

3. Semistructured interviews. In order to collect more focused data, we interviewed a sample of 38 members of the unit selected through a process of stratified, proportional, random sampling. First, four groups of people who played important roles in the unit were identified. The four groups were nurses, physicians, patients, and other professionals. Then, a subsample of people from each of these groups was selected. The size of each subsample was proportional to the total number of people in each group. We randomly selected the subsamples from the unit's employment and patient rosters. Thus, the sample of interviewees comprised 19 full-time nurses, 6 from the day shift, 6 from the night shift, and 7 from the evening shift; 4 physicians; 4 other professionals (e.g., psychologists, social workers, and occupational therapists); and 11 patients or members of patients' families. We designed a semistructured interview schedule that focused on the question of the nurses' dress code. Four separate but similar interview schedules were prepared for interviews with members of the various subsamples. (Appendix A gives a sample schedule.) Interviews lasted between 40 and 90 minutes and were recorded and transcribed verbatim. We interviewed unit members during their work time and interviewed others during the day or during visiting hours. Everyone we approached agreed to be interviewed and signed an informed consent form.

4. Free associations. We also asked nurses to provide their free associations with eight terms. We determined which terms to use from the initial interview with the head nurse and our review of the available literature on dress, rehabilitation treatment, and nursing. Specifically, nurses were asked to note the first five words that came to mind in response to the following terms: uniform, rehabilitation, hospital, scrubs, doctor, dress code, nurse, and street clothes.

5. Formal documents. We collected and scanned documents and training materials relevant for or used in the unit. These documents included hospital and unit policy manuals (e.g., "Rehabilitation Nursing Specialty Practice," a hospital document), training manuals of the hospital and the unit, various forms used in the unit and the hospital, and newspaper and other archival data about the hospital and the unit.

Data Analysis

These multiple sources yielded a large amount of qualitative, narrative data and a smaller amount of quantitative data. We conducted an initial set of quantitative analyses about two specific questions: (1) What are patients' feelings and preferences about nurses' dress? and (2) What are nurses' preferences regarding the dress code? To advance our theoretical understanding of the dynamics that surrounded organizational dress, we then conducted an inductive analysis of the qualitative data. Following the iterative process recommended by Strauss and Corbin (1990) and Miles and Huberman (1984), we traveled back and forth between the data and an emerging structure of theoretical arguments. The recurrent visits to the data helped us build

and refine an increasingly coherent conceptual framework that captures and explains the richness evident in the data and also makes a sound theoretical contribution.

Initially, we scanned the data in search of dominant themes. Examples of themes that we identified at this stage are "street clothes represent the uniqueness of rehabilitation patients," "nurses want the autonomy to decide on their dress," and "rehab isn't what it used to be." We identified more than 50 such themes. We also noticed that on only a few occasions (less than 10 percent) did the *same* informant advocate *one* dress form to represent *one* theme or issue (e.g., street clothes and status). In other cases (more than 60 percent), the *same* informant appeared to use the *same* dress form to signal his or her stance on *different* issues. For example, the head nurse wanted to retain street clothes both because of their link to the rehabilitation philosophy and because of their implications for patients. In yet a third pattern of responses (approximately 25 percent), the *same* informant used *different* dress forms to signal his or her stance on *different* issues. For example, one nurse noted that she appreciated street clothes because of their link to the rehabilitation philosophy but was for scrubs because she wanted to be able to decide to wear them.[8]

We then brainstormed alternative conceptual structures that would describe the manner in which these themes could be related to each other. For example, at this point we noted that dress was often representing issues having to do with what it meant to be a nurse on this unit. We then sought theory or research in organizational behavior that might help us comprehend the role of dress in this unit and to which we felt this study of dress might contribute. We had started the study because of an interest in organizational dress, but the initial stages of the data analysis suggested to us that dress was, in this context, part of a larger organizational process. We decided that the most appropriate theoretical framework was that of organizational identity and organizational symbolism. Once we had agreed on this broad conceptual structure, we reviewed all the data and discovered ten dominant identity meanings of dress that appeared in most or all of our data sources.

Next, we sought to discover how and when these meanings of dress appeared in the various sources of data we had collected; Appendix B summarizes the results of this analysis. At this stage, we also tried to identify whether clusters, or subgroupings, could be identified in the data. In other words, we tried to answer questions such as these: Are certain themes more predominant among staff members with higher tenure? . . . among those on certain shifts? . . . within a certain role? We found the biggest differences

[8] Initially, the result of these multiple representations of dress was confusion. The unit was like the mythical Tower of Babel—but in reverse. Instead of people trying to say the same thing using different languages, members were using the same "language" (object symbol) to say very different things. Our intervention helped resolve these confusions not because we could find "the right meaning of dress" but rather because we helped members express and recognize many meanings and issues inherent in the dress conflict.

arose between the responses of nurses on different shifts (day versus evening and night) *and* between nurses in different hierarchical positions (managerial versus floor nurses).

This wave of analysis helped crystallize how each piece of data fit with previous work on identity and symbolism and how the pattern of our findings could enhance available theoretical knowledge on these notions. At the end of this phase, we were able to articulate the thesis advanced in this article: that dress was used to symbolize and negotiate a complex and contradictory set of issues that represented the social identities of the nurses on this unit. The remainder of this article explains, illustrates, and elaborates this thesis.

FINDINGS

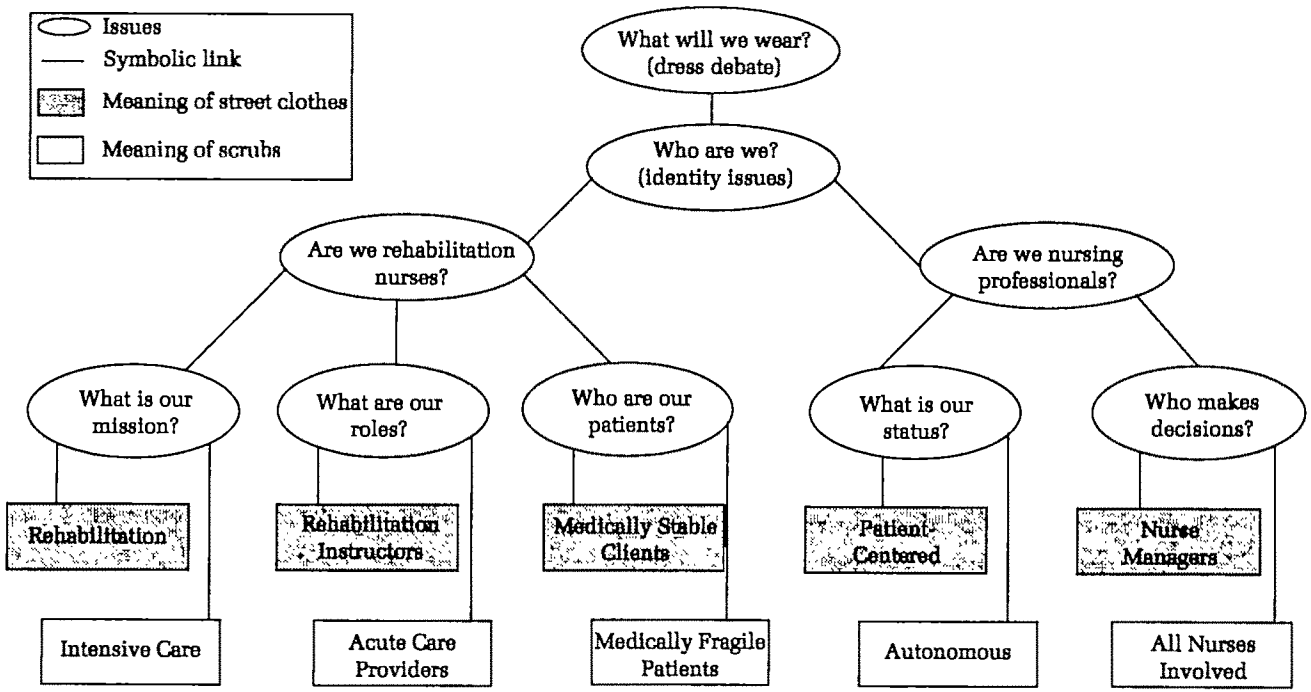
Our findings suggest that nurses attempted to answer the abstract and complex question, Who are we as nurses of this unit?, through discussing the question, What should we wear? Nurses' conversations about dress, however, did not reveal a simple or unitary notion of identity; rather, multiple forms of dress were used to represent multiple and conflicting perspectives on multiple identities. In brief, a debate over dress revealed the complexity of the social identities that existed on the unit.

Organizing Multiple Perspectives on Dress: A Web of Identity Issues

Our analysis of the data suggests that informants used particular forms of dress (e.g., street clothes or scrubs) to represent a variety of issues related to their social identities. The data further revealed that these patterns of individual responses were not random; rather, choices of particular dress forms reflected distinct subgroups. Two important characteristics that defined subgroups were shift membership (day versus evening shift) and hierarchical membership (management versus staff nurses). Each of these subgroups preferred a particular dress option because of the social identity issues it represented. To illustrate, day shift nurses typically preferred street clothes because they preferred the rehabilitation unit identity, while evening and night shift nurses preferred scrubs because they represented the acute care unit identity. In contrast, issues surrounding professional identity divided floor nurses from managerial nurses. Thus, our analysis revealed that managers tended to prefer street clothes, which represented a patient-centered identity, and floor nurses preferred scrubs, which symbolized an autonomous professional identity. Figure 1 illustrates this complex web of identities and issues.[9]

[9] The web illustrated in Figure 1 did not exist in the mind of any single organization member. Rather, each member used a particular dress form or forms to represent his or her stance on particular issues. The web of meanings depicted in Figure 1 became apparent to us only when we, as outsiders, tried to comprehend the meaning and implications of the dispute about dress on the unit.

FIGURE 1
Web of Identity Issues Evoked by Dress Debate



Dress and Hybrid Unit Identities

To begin, the dress debate revealed that the organization was characterized by a hybrid identity. According to Albert and Whetten, a hybrid identity "is composed of two or more types that would not normally be expected to go together" (1985: 270). Members' views of this unit's organizational identity included two opposing identities: rehabilitation unit and acute or intensive care unit. Table 1 illustrates the differences between the two identities. As is noted in Table 1, providing rehabilitation differs from providing traditional hospital acute care because rehabilitation involves wearing street clothes rather than traditional nursing attire, is performed along with a team of other professionals rather than by one nurse alone, and consists of helping and teaching patients, in addition to providing routine medical attention. Furthermore, the focus of rehabilitation on teaching patients to care for themselves is different from acute care's focus, which is on helping patients regain medical health or stability.

Our data suggest, however, that the competing identities summarized in Table 1 existed simultaneously on the unit. Table 2 illustrates how data from various informants included references to both the rehabilitation and the acute care identities. As is evident in Table 2, everyone associated with the unit, including physicians, social workers, managers, nurses, and patients, recognized both identities: that of a unit providing rehabilitation and that of a unit providing acute medical care.[10]

[10] One reason for the salience of the hybrid identity may have been a transition in the unit. Informants made recurrent references to rehabilitation as the "old" identity and to "acute care" as the "current" or "new" identity.

TABLE 1
Key Indicators of Rehabilitation and Acute Care Identities

Rehabilitation Identity	Acute Care Identity
Nurses wear street clothes	*Nurses wear scrubs*
Patients wear street clothes	Patients wear pajamas
Patients walk around	Patients stay in bed
Patients are disabled, but able to care for themselves	Patients are sick, dependent on medical staff
Patients stay on the unit one to four months	Patients stay on the unit less than one month
Patients learn to function in regular, nonhospital environment	Patients require special hospital equipment such as IVs and ventilators
Nurses teach patients	Nurses take care of patients
A team of professionals develops a treatment plan for each patient	Individual professionals apply expertise individually to patients
Families participate in the care of patients	Families visit patients, but medical treatment is left to professionals

TABLE 2
Multiple Unit Identities: Data from Multiple Informants

Informant	Rehabilitation Identity	Acute Care Identity
Physicians	[In rehab we] teach patients how to do things at home, particularly the medical routines with bowel, bladder, skin care, medications, etc., and to a significant degree with the functional activities, dressing, eating, getting yourself out of the wheelchair and in and out of bed.	[This unit has a] traditional nursing role, which is providing nursing care which includes the usual kinds of things like keeping a person clean with a bath, and giving them food, and dealing with their nutritional needs. Many times that's artificial, tubes, that sort of things—dealing with intravenous medications, and oral medications, and wound care.
Other medical professionals (rehab team)	We are talking about bringing a person back to function. The function is actually defined by the person involved. Nurses are responsible for teaching the families, which is a real important part of rehab. The families actually take over where we leave off.	The growing problem that is very real is that we are taking patients sooner. Patients are much sicker than they have been historically. Patients still have tubes. Our people still have problems, the bowel and bladder issues of the sick. They're still very sick.
Management	Acute care is caring for a sick person and the nurse is the care giver, nurturer, the person who takes care of them. We wanted that perception to be different in our unit, that the nurse's role was to help them learn to take care of themselves.	We now have patients who are sicker than they have ever been in the past. Over the last few years that's been a pattern. They come to us sicker now and there is a true part of our population at any one time who is sick and needs to be treated as if they are sick.
Nurses	We are trying to get them ready for being discharged from the hospital, and to quit thinking of themselves as being patients in a hospital, but just as people who have a long-term disability and are getting ready to go home.	There was a very high acuity, patients were very sick, and there were few nurses, so the unit was very stressful. So we're going home with green slime and yellow slime and every kind of slime all over your clothes. These patients need constant attention, they have the kinds of problems that other surgical units have.
Patients	When you go to rehab you have so much progress to make, you are going to be here for so long, you have to start doing things on your own and start doing what you want to do. The psychological aspect of rehab is 90 percent of the progress you are going to make, is having the right attitude, and they try to treat me like I can do that.	My husband had aspirated pneumonia, and the stroke affected his swallowing. He can't swallow. He's now on the G-tube. He has to be suctioned right now about every hour or hour and a half. They also found that he has an aneurysm in his stem of his brain the size of a pea. They did an MRI and that's where they found it. He also had clogging of his arteries leading to the heart, so they chose not to do the surgery because of the aneurysm. Other than that, everything's been good.

In other words, as Table 2 suggests, the unit was seen as one that provided both education (rehabilitation) and traditional nursing (acute care). Nurses were expected to serve both as educators and as caregivers. Patients, moreover, varied considerably in their medical conditions: some were medically stable (rehabilitation), while others were more fragile (acute care). Each dress form (street clothes and scrubs) represented one identity (rehabilitation and acute care, respectively). That the data in Table 2 were collected in response to our questions about dress on the unit reinforces our assertion that, for members of this organization, the dispute about dress was actually a dispute about the issues that dress represented.

Our data further revealed that the general question of unit identity consisted of a set of subquestions or issues. Specifically, the question, Who are we as a unit?, comprised these subparts: Why are we here? Whom do we serve? and What do we do? Put another way, questions about dress were interpreted in these terms: What is our mission? Who are our patients? and What are our roles?

Rehabilitation Unit Identity: Its Issues and Dress Code

As Figure 1 suggests, the rehabilitation unit identity encompassed a variety of issues: unit mission, unit patients, and nurses' tasks. The first issue, the unit's mission (which was also known as the "rehab philosophy"), comprised the core set of beliefs that historically defined rehabilitation nursing. For as long as nurses could recall, the rehabilitation philosophy had been what made the unit unique because it set a goal of helping patients (also called "clients") make a transition from being patients to being independent individuals outside the hospital. That street clothes served as a central symbol of this mission was evident in all types of data that we collected (see Appendix B). To illustrate, one nurse described the unit mission as follows:

> We are creating an environment in which [clients] can become rehabilitated by giving them the information, knowledge and expertise. Our focus is helping them identify a new state of health. . . . [this is why we should wear street clothes].

Another day shift nurse explained in an interview:

> The philosophy behind [street clothes] is based on the fact that we want patients to see a distinct difference between the acute care unit and the rehabilitation unit.

The transition these informants made from talking about the mission of the unit to talking about the unique dress code of the unit illustrates how the two notions were tied in their minds. This sentiment was also expressed in a pamphlet that was distributed to new patients on the unit, which stated this:

> We believe that patients who wear pajamas will think of themselves as "sick," and by wearing street clothes, patients think of themselves as moving out of the "sick" role and into rehabilitation.

Nurses similarly linked "street clothes" with "rehabilitation" in their free association responses in that both sets of associations centered around notions of healthy and personal situations. Recurring associations to both terms were "personal," "friendly," and "normal."

A second issue associated with the rehabilitation identity was the nature of the unit's patients. Specifically, the debate about dress seemed to represent arguments regarding the extent to which patients on the unit were acutely ill or medically stable. This debate was critical because the condition of patients directly impacted the demands on the unit and its employees. Moreover, the medical stability of patients was an element that historically had differentiated rehabilitation from other forms of medical care. In this context, street clothes symbolically represented the assumption that patients on the unit were well enough to receive rehabilitation treatment and to function independently. According to the perceptions of day shift nurses, the majority of the unit's clients were medically stable. As one nurse explained,

> [they] are really much more like clients than patients. They are in [the process of] getting better in that transition period.

These perceptions of patients as medically stable were related to day shift nurses' choice of dress code. To illustrate, a nurse noted:

> If we are going to be their teachers, and they are going to act as if they are healthy, we shouldn't be wearing scrubs.

A third identity issue concerned roles. Day shift nurses saw their dominant role requirements as ones that reflected a rehabilitation identity. Obviously, the level of patient acuity indicated what tasks team members performed. What appeared in our data, however, was that there were drastic differences between the day and evening shift nurses in the perceptions of dominant tasks. These differences existed even though *all* nurses treated the *same* patients. Day shift nurses saw their role as comprising predominantly rehabilitation tasks. This statement by one day shift nurse summarizes that view:

> On the day shift, the main focus of our patients is getting them up into their wheelchairs and then dressed for their appointments to leave. For most of the day, they are gone. And then I attend a lot of [rehab team] meetings and do a lot of paperwork and that kind of thing.

Our observations of nurses working different shifts confirmed that day shift nurses did indeed have tasks that fit better with the rehabilitation identity. For example, day shift nurses often attended meetings with other rehabilitation team members and developed patient programs. They also engaged in "acute care tasks," such as lifting patients into and out of wheelchairs and dressing them for their various therapy sessions. But rehabilita-

tion roles were most often indicated as dominant role behaviors for day shift nurses, while acute care roles were viewed as dominating the later shifts.

These perceived differences in dominant role behaviors were associated with different types of dress. Street clothes were seen as appropriate for the tasks of day shift nurses, and scrubs were deemed appropriate for the tasks of evening shift nurses. As one day shift nurse explained:

> When you are seen by a lot more of the administrators and the rest of the rehab team . . . and you have a lot of meetings, you feel comfortable in your own [street] clothes.

In short, day shift nurses viewed street clothes as representing various issues associated with a rehabilitation unit identity. Specifically, they saw the unit's rehabilitation mission, its medically stable patients, and its dominant roles to be tightly bound to street clothes—and ultimately to the notion of rehabilitation.

Acute Care Unit Identity: Its Issues and Dress Code

The second quote in the opening of this article is from an evening shift nurse who saw the unit as providing acute rather than rehabilitation care. Like the day shift nurses, evening and night shift nurses[11] associated dress with the unit's mission, its patients, and its roles. However, the perceptions of each of these were almost diametrically opposite, in spite of the fact that all the nurses worked on the same unit and with the same patients.

To begin, the evening and night shift nurses saw the mission of the unit as acute care, and not rehabilitation. Members of the evening and night shift were aware of the rehabilitation philosophy and its historical importance, but they believed that this identity was no longer appropriate. The evening shift nurses' request for scrubs, in particular, signaled a challenge to this mission. Scrubs are medical attire typically associated with surgery and acute care nursing.

The request for scrubs was seen as a challenge to the rehabilitation identity in that its focus was on individual medical professionals providing medical care to sick patients. As one evening shift nurse complained: "This doesn't feel like rehab to me. It feels like I'm working in ICU."[12] Nurses associated this new unit mission with a new dress code: scrubs. To illustrate, one nurse noted that this unit had "the kinds of problems that other surgical units have. . . . So people started saying, 'I'm tired of going home in green slime. Why can't we wear scrubs?' "

The link between scrubs and more traditional forms of nursing (e.g., acute care) was also evident in the free association responses. The term

[11] Although less vocal than their evening shift counterparts, the night shift nurses' stances on unit identity issues were identical to those of the evening shift nurses. For this reason, evening and night shift nurses are mentioned together throughout this section.

[12] ICU is a common acronym for intensive care unit, which is a prototypical acute care unit.

"scrubs" elicited associations similar to those generated by the terms "hospital" and "uniforms." Associations with both of these terms centered around illnesses, medical treatments, and physical ailments or handicaps.

Night and evening shift nurses' perception of patients also differed from those of their day shift counterparts. The request for scrubs was an attempt to signal a perception that the patient population had become more fragile. To illustrate:

> Most of our patients on the unit now aren't "rehab-able"—I mean they aren't rehab patients when they first get to us. They are coming to us right from ICUs so they are really sick.

This association between scrubs and patient acuity was salient when conversations about dress shifted to conversations about patient acuity, and vice versa. Thus, in the minds of organization members, patient acuity was intimately tied to dress code:

> We are getting patients that have more secretions—they are a lot sicker. They are not really the rehab persons that I started with—having been here six years ago it was different . . . I was one of the people who signed to wear the scrubs.

Not only was the change in patient population associated with a new dress code for nurses (scrubs), it also called for a new dress code for the patients themselves, as the following quotes illustrate:

> They know they're sick and you're not going to fool them by saying "you're wearing street clothes and we're going to tell you you're not sick." I mean people are smarter than that . . .

and

> We used to require every single patient to put street clothes on. We don't do that anymore. Some patients don't get out of bed. They don't get dressed because they're too sick.

Finally, evening and night shift nurses advocated scrubs because they felt that their dominant role behaviors were acute care tasks. Like day shift nurses, evening and night shift nurses performed tasks related to both rehabilitation and acute care. For example, evening shift nurses spent time educating patients and their families, a role related to the unit's rehabilitation identity. However, they felt that acute care activities monopolized their time, as one nurse described:

> On the evening shift, we do a large majority of the work: showers, baths, [and] bowel programs. Not like the day shift.

All members of the evening shift described acute care tasks as salient.

Once again, these dominant role behaviors were associated with dress, as the following quote illustrates:

> We do a lot more as far as the bowel program. You are suctioning patients and doing a lot of things like that. For such things, I personally would not like to wear my street clothes. I'd like to wear my scrubs.

In short, evening and night shift nurses viewed scrubs as representing various issues associated with an acute care unit identity. Specifically, they saw the unit's mission, its medically fragile patients, and its dominant roles to be tightly bound to scrubs because the unit's identity was really based in acute care.

Dress and Hybrid Professional Identities

The debate about the unit's dress code also served to surface divisions in nurses' perceptions of professional identity that coexisted on the unit and were apparent to most members of the unit. Table 3 reveals that floor nurses, nurse managers, physicians, patients, and other rehabilitation team specialists had two views on the professional identity of nurses. The first view we call patient-centered. Central to this identity, referred to by previous authors as the "Florence Nightingale identity" (cf. Jones, 1988; Siegel, 1968) or "ministering angels identity" (Jones, 1988; Summers, 1984, 1989), is the idea that nurses should act first and foremost in accordance with the wishes, needs, and dictates of their patients (cf. Chacko & Wong, 1984; Davis, 1974; Watts et al.).

The second view we call the autonomous or nurse-centered professional identity. This identity evokes the professional model of physicians more than the traditional model of nursing and suggests that nurses should make their own decisions regarding their behavior and that those decisions should be trusted. This distinction is similar to that found by Milward (1995) in her studies of nurses in Britain. She referred to two professional identities: the "patient centered" one, a communal-interpersonal identity that is associated with low status, and the "professional distinctiveness" one, an instrumental-intergroup identity that is associated with higher status.

The debate about professional identity comprised two issues: What is our status?[13] and Who makes decisions? Moreover, as with the hybrid unit identity, evocation of certain issues tended to polarize subgroups within the organization. Differences regarding issues of professional identity, however, did not follow differences in shifts. Rather, professional issues became clear when we compared what the dress code meant to managerial and floor

[13] The issue of status could also be seen as being linked to unit identity, in that status is often a function of the team or organization in which one is a member. We chose to discuss this issue primarily as a professional identity issue because the data suggested that nurses were primarily worried about their status as professionals rather than the status of their organization.

TABLE 3
Multiple Professional Identities: Data from Multiple Informants

Informant	Nurses as Servants to Others: Patient-Centered	Nurses as Autonomous: Nurse-Centered
Physicians	Nurses not only are going to be taking care of people who are quite sick even though they are on a rehabilitation unit, I would say that nurses now have patients that even more need the effect that the unit does reinforce. I think it would be really poor [to wear scrubs].... They [patients] are the very people who need every subtle cue you can come up with to counteract that self-image [of the sick role].	Nurses are going through an evolution. Nurses are a part of the tradition of being a servicing group of women ... or service in the need of others. They've taken more authority, responsibility now ... they make nice salaries and they are less willing to be treated as second-rate people.
Other medical professionals (rehab team)	Interviewer: [With regard to dress] If it came down to patients wanting one thing and nurses wanting another thing, which would you vote for? Informant: I guess I would vote for the patients.	[Dress is], at least, expressing a change in her self-concept of herself. If nurses are struggling for anything, they are struggling for recognition for their professional preparation or competence. Maybe a change in dress would accomplish that.
Management	I think it was about 17 years ago that we went to street clothes ... That was the statement and the philosophy our dress code expressed—that the reason we do it is for the patients ... I said it can't be a majority rule—we have to find out, "Does it [street clothes] indeed make a difference [to patients]?"	I think nurses want to have the ability to wear anything they want to. I think that they want to say "If I feel real really grungy and I know tomorrow who I'm going to have and they need suctioning and tube feeding and bowel accidents, I want to have the option of wearing uniforms."
Nurses	My primary purpose here is to serve that patient, and work. When I interviewed here—it was an observation that I made when I was here that day—people were not wearing uniforms. That immediately felt right to me, because the clients are really much more clients than patients. They are to be getting better in that transition period. The process, I do believe, is affected by what we wear.	I was one of the people who signed up to wear scrubs. I don't know that I would wear them every day, but I was signing up for the freedom to do that.
Patients	No. I don't think that they should be allowed to wear scrubs, actually. It's just because it's been really good for me to see nurses wear whatever they want—wearing street clothes.	If I were a female nurse, those things [scrubs] are anything but flattering ... I would still leave it up to them—whatever they would like to wear.

nurses. Managers tended to adopt the patient-centered professional identity, while floor nurses advocated the autonomous one. These differences were embodied in their choices of dress codes.

Patient-Centered Professional Identity: Its Issues and Dress Code

As Table 3 suggests, management felt that nurses should wear street clothes "for the patients." This logic became clear when the head nurse first reacted to the dress ballot. According to the head nurse, she warned the floor nurses that they needed to subordinate their desire for a new dress code to the needs of the patients. She explicitly explained:

> I said it can't be a majority rule. We have to find out, "Does it [street clothes] indeed make a difference [to the patients]?" and this is what will make the decision.

She similarly said of the ballot incident:

> Some nurses seemed to think at the beginning, when the ballot was signed, that it would be just a majority rule—that if the staff wanted to change the dress code, and more than 50% agreed, then they could. I made it real clear that that was not the case.

By framing her reactions to the dress code in this way, the head nurse asserted her position that the needs and wishes of the nurses were secondary to those of the patients. Her stance, similar to that taken by many other professionals and patients on the unit (see Table 3), was that nurses' professional identity should be patient centered. Stated differently, the status of nurses was subservient to that of patients. Patients' needs, not nurses', were of paramount importance. As a result, nurses were supposed to wear street clothes.

The head nurse's reaction to the dress ballot and subsequent declaration that nurses should wear street clothes also implied assumptions about how and by whom decisions were made on the unit. These discussions about how to make the decision about dress came to symbolize how unit decisions were made. Following the head nurse's logic, as articulated below, the street clothes option came to symbolize one decision-making process: that all key decisions on the unit were to be made by the head nurse or other unit managers:

> I'm responsible for the budget for the personnel and for all the commodities on the unit and for the integrity of the structure of the operations of the unit. I'm also responsible for maintaining collaborative relationships with the other departments . . . and for problem solving with other departments in the institution that relate to our unit . . . Certainly, [I'm] primarily responsible for the nursing care that all the patients receive and I am responsible 24 hours a day, seven days a week . . . And since it is my responsibility to maintain [the unit] as a rehabilitation unit,

> since I believe that is an important role, I said it can't be a majority rule.

The unit's management, in turn, supported both the head nurse's stance on the dress code and her stance on how the decision about the dress code should be made. That is, they viewed her top-down decision making as legitimate and backed keeping the street clothes dress code, which in turn strengthened the association between street clothes and centralized decision making on the unit. This association was further strengthened by the fact that it was common knowledge that the head nurse had had a central role in instituting the street clothes dress code several years back. As one floor nurse lamented:

> [The head nurse] does not want nurses to wear scrubs on this unit. She has said so very clearly . . . that unless there is a clear mandate, like we are all going to rebel here, that it'll stay street clothes. I mean, that is what I really think will happen—and in some ways, that's a shame.

Keeping the street clothes dress code, therefore, symbolized how decisions were made on the unit and who made them. Ironically, the street clothes dress code, which allowed floor nurses considerable autonomy in choosing what to wear to work, came to symbolize a lack of professional autonomy and centralized managerial decision making on the unit.

Autonomous Professional Identity: Issues and Dress Code

Although floor nurses understood the traditional identity of nursing as one based on service and "servitude," they perceived an alternative that would support a professional identity and their autonomy. Ironically, their symbol for autonomy was a dress code that limited options for work clothes to scrubs. At first, we were puzzled that nurses would choose to limit their dress options. In previous work (Rafaeli & Pratt, 1993), we predicted that organization members would be likely to gravitate toward greater choice in organizational dress. This seemingly paradoxical behavior became clear, however, when the link between scrubs and professional autonomy became apparent.

Scrubs represented two aspects of professional autonomy, as summarized in Figure 1: status and decision making. First, scrubs symbolized high status because they were associated with prestigious health care professionals and prestigious health care responsibilities. For example, one doctor thought that rehabilitation nurses wanted to wear scrubs in order to associate with the prestigious intensive care unit (ICU) nurses, who typically wore scrubs. An association with the ICU, the physician noted, meant "a certain level of respect that rehabilitation nursing currently does not have." Similarly, a floor nurse explained how scrubs represented the highest degree of professional autonomy found in the health care system:

> [Scrubs] are associated with the highest technical areas in the health care system. The closer you get to a medical task, the more valued you tend to be . . . [scrubs] mean you have a special skill. That you are almost as smart as a doctor.

More broadly, in the context of all the participants in the unit, the demand for scrubs represented a struggle for greater professional recognition: nurses were *not* to be treated "just like some visitor" to the unit.[14] Rather, nurses should be clearly identifiable as professionals and should look the part. A social worker suggested:

> [Dress is], at least, expressing a change in her concept of herself. If nurses are struggling for anything, they are struggling for recognition of their professional preparation or competence. Maybe a change in dress would accomplish that.

The evening shift nurses' call for a scrubs dress code, therefore, signaled that nurses deserved higher status. It did so by re-creating the medical hierarchy and then placing rehabilitation nurses higher in that hierarchy (cf. Becker et al., 1961).

Floor nurses also used scrubs to signal a need for greater participation in unit decision making. As autonomous professionals, floor nurses noted, they should be allowed to decide what to wear. Thus, scrubs was seen as a symbol of the challenge to the centralized decision making on the unit. As two nurses explained:

> We need to create the environment we are working in . . . I think everybody has to have input. If most of us would be happier in scrubs, I think we need to do that.

and

> I'm sure we'll continue to have the current [street clothes] dress code. And that's too bad. Because we're adults and we should be allowed to decide what we wear.

The link between scrubs and participative decision making was also noted by the chair and other members of the dress code task force. When describing the dress conflict, the clinical nurse specialist commented to us that the demand for scrubs represented members' "first step toward self-governance." Similarly, a member of the task force told us, "nurses are fighting about scrubs . . . what they want is the opportunity to assert their opinion."

In sum, dress on this unit represented multilayered social identities. Interwoven into what it meant to be a rehab nurse in this hospital were

[14] Our data revealed that because rehabilitation nurses wore street clothes, it was often difficult to distinguish nurses from patients and their families.

multiple and competing issues regarding the identity of the unit and the profession. When we communicated these findings to the nurses on the unit, they responded by adopting a new dress code—one that allowed nurses to wear either street clothes *or* scrubs. This solution suggests that they embraced and accepted the complexity that our analysis unraveled. This analysis and the findings that sparked it have the potential to increase understanding of the role of dress and other symbols in organizations that contain complex unit, professional, or other social identities.

DISCUSSION AND IMPLICATIONS

This paper documents the transition from our original interest in the study of dress to an interest that included complex notions of multilayered social identities. We believe that the transition we experienced offers support for our thesis that dress served as a vehicle for representing and negotiating a web of multiple and contradictory identity-related issues. Our study, therefore, illustrates how an examination of organizational symbolism can offer a view into organizational identity and ambivalence, as well as identity conflict and management.

The complex relationship we documented between the symbol of dress and an organizational reality poses a challenge to the prevailing (though often unstated) assumption in the organizational literature that belief systems and the symbols that represent them are stable and resistant to change (cf. Schein, 1985, 1991; Sproull, 1981). Our study unravels how organization members used dress to reflect multiple perspectives on multiple issues. Consistent with the differentiation and the fragmentation perspectives on organizational cultures and the hybrid view of organizational identities, it appears that the saliency of issues, perspectives on these issues, and associated identity beliefs may vary in different parts of the same organization (cf. Albert & Whetten, 1985; Barley, 1991; Feldman, 1979; Martin, 1992; Meyerson, 1990; Pratt, 1994; Smircich, 1983; Weick, 1991). This variation is projected onto the meanings that members of the organization confer upon symbols. Our study documented this process with respect to the symbol of organizational dress, but we believe our thesis can be generalized to other symbols. By implication, our findings therefore challenge the assumption of an "integration perspective" or a "monolithic identity" that suggests that a symbol represents one core set of organizational values.

One hypothesis that our data suggest but that we could not explore in this study is that the lack of integration of belief systems and symbol interpretation will be particularly striking when organizations experience rapid and powerful changes. There is reason to believe that rapid and extreme changes will give rise to multiple issues and multiple symbolic meanings (cf. Ashforth & Mael, 1996). The organization we studied was in a state of turmoil when the debate about the dress code emerged: a strike had just ended, and there was acute understaffing along with an increase in patient acuity. This turmoil may have impacted upon the issues that arose in the unit and

consequently, upon the meaning of dress. To illustrate, it may be that scrubs came to symbolize "fragile patients" because of the increase in patient acuity on the unit.

This hypothesis suggests a link between organizational events and the meaning of organizational symbols (cf. Welcomer, Gioia, & Kildruff, 1993). Subsequent research should more closely examine the relationship between the multiplicity of issues and opinions that a symbol can represent and organizational changes. Such research is inherently important, given the exponential rate of change in modern organizations (cf. Sasseen, Neff, & Sansoni, 1994; Weigert & Franks, 1989) and the possible increase in symbolic activity that may accompany this change. Health care organizations, in particular, might be excellent contexts for examining the relationship between change and symbolic activity, as recent developments in managed care threaten to throw these organizations into a state of chaos. Moreover, managers of health care organizations need to be sensitive to a change or an increase in symbolic activity and conflict. Such increases may indicate confusion and upheaval as various groups attempt to define what it means to be a provider of health care, given new organizational mandates.

The interdependencies among symbols, current issues, and core belief systems might also shed some light on how cultures, identities, and symbols can change within organizations. Our findings suggest that symbols not only represent *core values and beliefs* but may also come to represent a variety of *event-driven issues* within an organization (e.g., dress represented the change in the patient population). As symbols are reinterpreted in the context of different issues, they take on multiple meanings. As such meanings are shared, they may become part of the organization's identity and culture (Hatch, 1993). Hence, in this study, organizational dress represented more than just the unit's rehabilitation identity. As members considered their alternatives for a dress code, the meaning of each dress option came to signify the complex set of issues that the notion of rehabilitation represented, including the unit's mission, patients, and employee roles. Therefore, the discussions of dress ultimately led to both a new dress code and a broader understanding of what it meant to be a rehabilitation nurse in this hospital.

In a related vein, our data extend previous work on organizational and social identities and how they are expressed and negotiated within organizations (Albert & Whetten, 1985; Ashforth & Mael, 1989; Dutton & Dukerich, 1991; Dutton et al., 1994; Tajfel & Turner, 1985; Turner, 1987). We assert that social identities in organizations can be multilayered. To answer the question, Who am I?, in this unit meant considering an amalgam of unit and professional identities, which in themselves were multilayered because they comprised opposing values and beliefs.

Thus, organizational scholars studying organizational identity need to keep in mind a number of factors. First, there are multiple identities that a given employee may be drawing upon. Second, these multiple social identities may in themselves be hybrids (e.g., dualistic or fragmented). Third,

particular conditions might make particular layers of identity more salient than others (cf. Feldman, 1979). On this unit, for example, external pressures may have driven the increased awareness of the acute care identity. Fourth, particular sources of self-definition may influence embraced layers of social identity. In this unit, group membership seemed to play a key role in identity salience. This link complicated the solution of the dress debate because a nurse could advocate street clothes when thinking of herself as a member of the day shift, but then advocate scrubs when reminded of her status as a floor nurse (cf. Tajfel & Turner, 1985).

Viewing social identities in organizations as being multilayered not only impacts how researchers think about organizational identity, but also how the construct of identity can or should be measured. Our thesis suggests that identity scholars should be sensitive to the fact that "where you sit" may determine "what you see" regarding organizational identities and their symbols (cf. Bazerman, 1991; Dutton & Jackson, 1987; Feldman, 1979; Tversky & Kahneman, 1974). Instruments that are sensitive to multiple perspectives—and consequently, multiple identities—may help scholars understand more richly the dynamics of identity and even identity conflict within organizations. Symbols (and debates about them) may be among such instruments.

Our findings specifically suggest that the management of symbols may be one vehicle for discussing ideological contradictions, dualities in organizational belief systems, and other sources of "sociological ambivalence" (Merton, 1976). Previous authors have argued that such normative contradictions are often ignored (Coser, 1979; Merton, 1976; Parsons, 1951) or are resolved through the adoption of mediating myths (cf. Abravanel, 1983; Scheid-Cook, 1988). Our study suggests that internal organizational contradictions may be acknowledged and embraced through symbols. Symbols such as dress may therefore become the focus of communication among members not because they themselves are important; rather, they become important because they offer a concrete representation and an accessible communication medium about otherwise abstract and threatening contradictions.

Debating symbolic representation of conflicting identities and identity issues may further help organizational *subgroups* manage internal inconsistencies. In this unit, the advocacy of two dress styles may have helped manage conflict by legitimizing both sides of the debate. The rehabilitation nurses we studied eventually resolved the dress debate by adopting a policy that allowed nurses the choice of wearing street clothes or scrubs to work. This solution symbolically maintained that this unit had elements of *both* rehabilitation and acute care and that the profession was *both* patient-centered and autonomous. That is, it symbolized the unit's plurality. The solution also acknowledged the ambivalence that may be unavoidable in this unit, given its unique care-giving charter (cf. Meyerson & Martin, 1987; Pratt, 1993). In this manner, dress served to bring together opposing sides without creating "one big happy family." It provided integration without consensus,

which may be essential, given that ambivalence and ambiguity are inherent to social life (cf. Feldman, 1991; Linstead & Grafton-Small, 1992).

Furthermore, conversations about a symbol may help *individuals* manage their own conflicting beliefs. The symbol of dress in our study did more than just facilitate the management of identity conflicts between and among subgroups. Our data suggest that individuals in this unit used organizational dress to mark for themselves their stances on a variety of identity-related issues. Yet the dress style preferred when one issue was considered was not always consistent with that preferred when a different issue became salient. Interestingly, members did not feel a need to reconcile conflicting feelings about dress. Thus, a nurse could maintain that she would vote for scrubs because they gave her control over decision making, while a bit earlier she had maintained that she endorsed street clothes because she saw herself as a teacher, not an acute care provider. In other words, symbols allow members to deal with contradiction by compartmentalizing[15] potentially difficult identity conflicts (cf. Pratt, 1994; Smith, 1968; Swann, 1987).

More generally, organizational dress may be particularly useful for examining the dynamics of identity conflicts within organizations (cf. Geertz, 1971; Van de Ven, 1985). Dress is similar to other symbols in that its meaning can be multivocal (Martin, 1992). However, dress has characteristics that are not shared by other object symbols and that extend its usefulness as a symbol of identity conflicts: it is highly visible and highly malleable. Dress behaviors such as attaching personal pins or buttons to uniforms, for example, may offer nonverbal indicators of multiple identities in that they signal tension between the need to individuate and the need to belong, or tension among conflicting desires to belong to different social groups (cf. Davis, 1992; Simmel, 1971). Thus, dress can not only take on a variety of meanings in organizations but can also be relatively easily shaped and adapted to outwardly reflect competing demands imposed by multiple identities (Davis, 1992; cf. Rafaeli, Dutton, Harquail, & Mackie-Lewis, 1997).

It is, of course, important to recognize this study's obvious limitations. First, this was a qualitative, inductive study, and it cannot provide grounds for hypothesis testing. Rather, what has been offered here is a conceptual framework. This framework and the hypotheses that it suggests regarding the roles of various symbols, including organizational dress, in sorting out issues of social identity need to be tested in future, quantitative studies. Second, the nature of our study suggests that we should be cautious in applying our findings to other organizational contexts and populations. To begin, this

[15] The nurses may have experienced little dissonance because each dress form reflected a different personal frame of reference. Perceptions of reality that are shaped by a specific frame of reference may endow symbols with specific meanings that are different from those occurring when another frame of reference is adopted. Thus, moving from the frame of staff nurse to the frame of day shift nurse could have led to different interpretations of the concept of street clothes without causing internal conflict.

study could be argued to be a single case study, in that we observed one unit of one organization. Moreover, our induction builds on a study of a university hospital, which can be argued to be a unique organizational form. Also, because of the traditions surrounding medical attire, dress may be a more salient issue in hospital settings than in other settings (cf. Bishop, 1934; Gjerdingen, Simpson, & Titus, 1987), and this salience may have led to the rich attributions to the symbol that we observed and reported.

Similarly, our study focused on a somewhat unique group of employees, health care professionals engaged in medical rehabilitation. We particularly focused on nurses, most of whom are women. It may be that women are more sensitive than men to dress and appearance issues (cf. Rafaeli et al., 1997). Such sensitivity on the part of our participants might also have served to magnify the importance of the dress symbol in the context we studied. In other words, it may be that the dynamics we describe cannot be generalized to other hospitals, to other groups of employees, or to other settings in which symbols do not have the history and cultivation that dress has in medical settings. We believe, however, that available theory and research about organizational symbolism (cf. Dandridge, 1983; Dandridge et al., 1980; Ornstein, 1986) and social identity (cf. Ashforth & Mael, 1996; Pratt & Dutton, 1996) support our assertion that similar dynamics can be observed in other types of organizations and with other symbols. Additional research is necessary to empirically validate this assertion.

In sum, we believe that our study offers new insight for emerging theory and research on the meaning and impact of the symbol of organizational dress. Our data suggest that requests for a change in dress code should not be dismissed as trivial or unimportant. Rather, such requests should be embraced as opportunities for unraveling what this symbol represents for members and constituents of organizations. It appears that, as Geertz noted, "man is an animal suspended in webs of significance he himself has spun" (1973: 5). We add here that employees are animals who use *symbols* such as dress to spin webs of organizational significance that suspend, surround, and perhaps even clothe them.

REFERENCES

Abbott, A. 1988. ***The system of professions.*** Chicago: University of Chicago Press.

Abbott, A. 1993. The sociology of work and occupations. In J. Blake & J. Hagen (Eds.), ***Annual review of sociology,*** vol. 19: 187–209. Palo Alto, CA: Annual Reviews.

Abravanel, H. 1983. Mediatory myths in the service of organizational ideology. In L. R. Pondy, P. Frost, G. Morgan, & T. Dandridge (Eds.), ***Organizational symbolism:*** 273–293. Greenwich, CT: JAI Press.

Albert, S., & Whetten, D. 1985. Organizational identity. In L. L. Cummings & B. M. Staw (Eds.), ***Research in organizational behavior,*** vol. 7: 263–295. Greenwich, CT: JAI Press.

Ashforth, B., & Mael, F. 1989. Social identity theory and the organization. ***Academy of Management Review,*** 14: 20–39.

Ashforth, B., & Mael, F. 1996. Organizational identity and strategy as a context for the indi-

vidual. In J. Baum & J. Dutton (Eds.), ***Advances in strategic management,*** vol. 13: 17–62. Greenwich, CT: JAI Press.

Barker, S., & Barker, R. T. 1994. Managing change in an interdisciplinary inpatient unit: An action research approach. ***Journal of Mental Health Administration,*** 21(1): 80–91.

Barley, S. R. 1991. Contextualizing conflict: Notes on the anthropology of disputes and negotiations. In M. H. Bazerman, R. J. Lewicki, & B. Sheppard (Eds.), ***Research on negotiation in organizations:*** 165–199. Greenwich, CT: JAI Press.

Bartunek, J. M. 1993. Scholarly dialogues and participatory action research. ***Human Relations,*** 46: 1221–1233.

Bate, P. 1990. Using the culture concept in an organizational development setting. ***Journal of Applied Behavioral Science,*** 26: 83–106.

Bazerman, M. 1991. Foundations of decision processes. In B. M. Staw (Ed.), ***Psychological dimensions of organizational behavior:*** 453–479. New York: Macmillan.

Becker, H., Greer, B., Hughes, E. C., & Strauss, A. 1961. ***Boys in white: Student culture in medical school.*** Chicago: University of Chicago Press.

Bishop, W. J. 1934. Notes on the history of the medical costume. ***Annals of medical history, new series,*** 6(May): 193–218.

Campbell-Heider, N., & Hart, C. A. 1993. Updating the nurse's bedside manner. ***Image: Journal of Nursing Scholarship,*** 25(2): 133–139.

Chacko, T., & Wong, J. K. 1984. Correlates of role conflict between physicians and nurse practitioners. ***Psychological Reports,*** 54: 783–789.

Cho, E., & Grover, L., 1978. ***Looking terrific: Express yourself through the language of clothing.*** New York: G. P. Putnam's Sons.

Cialdini, R. B., Borden, R. J., Thorne, A., Walker, M. R., Freeman, S., & Sloan, L. R. 1976. Basking in reflected glory: Three (football) field studies. ***Journal of Personality and Social Psychology,*** 34: 366–375.

Clark, B. R. 1972. The organizational saga in higher education. ***Administrative Science Quarterly,*** 17: 178–184.

Coser, R. L. 1979. ***Training in ambivalence: Learning through doing in a mental hospital.*** New York: Free Press.

D'Andrade, R. G. 1984. Cultural meaning systems. In R. A. Shweder & R. A. LeVine (Eds.), ***Culture theory: Essays on mind, self, and emotion:*** 88–119. Cambridge: Cambridge University Press.

Dandridge, T. C. 1983. Symbol's function and use. In L. R. Pondy, P. Frost, G. Morgan, & T. Dandridge (Eds.), ***Organizational symbolism:*** 69–79. Greenwich, CT: JAI Press.

Dandridge, T. C., Mitroff, I., & Joyce, W. F. 1980. Organizational symbolism: A topic to expand organizational analysis. ***Academy of Management Review,*** 5: 77–82.

Davis, F. 1992. ***Fashion, culture and identity.*** Chicago: University of Chicago Press.

Davis, M. 1974. Intrarole conflict and job satisfaction on psychiatric units. ***Nursing Research,*** 23: 482–488.

de Marley, D. 1986. ***Working dress.*** London: B. T. Batsford.

Dutton, J. E., & Dukerich, J. M. 1991. Keeping an eye on the mirror: Image and identity in organizational adaptation. ***Academy of Management Review,*** 34: 517–554.

Dutton, J. E., Dukerich, J. M., & Harquail, C. V. 1994. Organizational images and member identification. ***Administrative Science Quarterly,*** 39: 239–263.

Dutton, J. E., & Jackson, S. E., 1987. Categorizing strategic issues: Links to organizational action. ***Academy of Management Review,*** 12: 76–90.

Feldman, M. 1991. The meaning of ambiguity. Learning from stories and metaphors. In P. Frost, L. F. Moore, M. R. Louis, C. C. Lundberg, & J. Martin (Eds.), ***Reframing organizational culture:*** 145–156. Newbury Park, CA: Sage.

Feldman, S. 1979. Nested identities. ***Studies in Symbolic Interaction,*** 2: 399–418.

Forsythe, S. M. 1990. Effect of applicant's clothing on interviewer's decision to hire. ***Journal of Applied Social Psychology,*** 20: 1579–1595.

Forsythe, S., Drake, M. F., & Cox, C. E. 1985. Influence of applicant's dress on interviewer's selection decisions. ***Journal of Applied Psychology,*** 70: 374–378.

Fussell, P. 1983. ***Class.*** New York: Ballantine Books.

Gardner, G., & Simkins, R. 1976. Does it really matter what nurses wear in the intensive care unit? ***Maternal Child Nursing,*** July/August: 239.

Geertz, C. 1971. ***Myth, symbol, and culture.*** New York: Norton.

Geertz, C. 1973. ***The interpretation of culture: Selected essays.*** New York: Basic Books.

Gjerdingen, D. K., Simpson, D. E., & Titus, S. L. 1987. Patients' and physicians' attitudes regarding physicians' professional appearance. ***Archives of Internal Medicine,*** 147: 1209–1212.

Goffman, E. 1959. ***The presentation of self in everyday life.*** Garden City, NY: Doubleday.

Goodstein, F. 1981. The woman in white: It's time to put the nurse back into that image. ***Journal of Practical Nursing,*** February: 29.

Hall, E., Lamb, M. E., & Perlmutter, M. 1982. ***Child psychology today.*** New York: Random House.

Hatch, M. J. 1993. The dynamics of organizational culture. ***Academy of Management Review,*** 18: 657–693.

Hochschild, A. 1983. ***The managed heart.*** Los Angeles: University of California Press.

Janowski, M. J. 1984. My love affair with uniforms. ***American Journal of Nursing,*** August: 1241–1244.

Jones, A. 1988. The white angel (1936): Hollywood's image of Florence Nightingale. In A. H. Jones (Ed.), ***Images of nurses:*** 221–242. Philadelphia: University of Pennsylvania Press.

Joseph, N. 1986. ***Uniforms and nonuniforms: Communication through clothing.*** New York. Greenwood Press.

Joseph, N., & Alex, N. 1972. The uniform: A sociological perspective. ***American Journal of Sociology,*** 77: 719–730.

Kanter, R. M. 1972. ***Commitment and community: Communes and utopias in sociological perspective.*** Cambridge, MA: Harvard University Press.

Lavender, A. 1987. The effects of nurses changing from uniforms to everyday clothes on a psychiatric rehabilitation ward. ***British Journal of Medical Psychology,*** 60: 189–199.

Levine, D. 1988. Dressing for success: Nursing style. ***Imprint,*** 35(5): 50–54.

Levitt, M. 1981. ***The executive look: How to get it—How to keep it.*** New York: Atheneum.

Linstead, S., & Grafton-Small, R. 1992. On reading organizational culture. ***Organization Studies,*** 13: 331–355.

Louis, M. R. 1983. Organizations as culture-bearing milieux. In L. R. Pondy, P. Frost, G. Morgan, & T. Dandridge (Eds.), ***Organizational symbolism:*** 39–54. Greenwich, CT: JAI Press.

Lurie, A. 1981. ***The language of clothes.*** New York: Random House.

Manning, P. 1987. ***Semiotics and fieldwork.*** Newbury Park, CA: Sage.

Martin, J. 1992. ***Cultures in organizations: Three perspectives.*** New York: Oxford University Press.

Martin, J., Feldman, M. S., Hatch, M. J., & Sitkin, S. B. 1983. The uniqueness paradox in organizational studies. ***Administrative Science Quarterly,*** 28: 438–453.

Merton, R. K. 1976. ***Sociological ambivalence and other essays.*** New York: Free Press.

Meyerson, D. 1990. Uncovering socially undesirable emotions: Experiences of ambiguity in organizations. ***American Behavioral Scientist,*** 33: 296–307.

Meyerson, D. 1994. Interpretation of stress in institutions: The cultural production of ambiguity and burnout. ***Administrative Science Quarterly,*** 39: 628–653.

Meyerson, D., & Martin, J. 1987. Cultural change: An integration of three different views. ***Journal of Management Studies,*** 24: 623–647.

Miles, M. B., & Huberman, A. M. 1984. ***Qualitative data analysis.*** Beverly Hills, CA: Sage.

Milward, L. 1995. Contextualizing social identity in consideration of what it means to be a nurse. ***European Journal of Social Psychology,*** 25: 303–324.

Mitroff, I., & Kilmann, R. H. 1976. On organization stories: An approach to the design and analysis of organizations through myths and stories. In R. H. Kilmann, L. R. Pondy, & D. P. Slevin (Eds.), ***The management of organization design,*** vol. 1: 189–207. New York: North-Holland.

Molloy, J. T. 1975. ***Dress for success.*** New York: Warner Books.

Molloy, J. T. 1977. ***The woman's dress for success.*** Chicago: Follett.

Nerone, B. J. 1986. Nursing style: Is your image showing? ***Imprint,*** 33(1): 34–37.

O'Connor, S., & Lanning, J. 1992. The end of autonomy? Reflections on the postprofessional physician. ***Health Care Management Review,*** 17(1): 63–72.

Ornstein, S. 1986. Organizational symbols: A study of their meanings and influences on perceived organizational climate. ***Organizational Behavior and Human Decision Process,*** 38: 207–229.

Parsons, T. 1951. ***The social system.*** New York: Free Press.

Petrovich, D. V., Bennett, J. R., & Jackson, J. 1968. Nursing apparel and psychiatric patients: A comparison of uniforms and street clothes. ***JPN and Mental Health Services,*** 6(6): 344–348.

Pfeffer, J. 1981a. Management as symbolic action. In L. L. Cummings & B. M. Staw (Eds.), ***Research in organizational behavior,*** vol. 3: 1–52. Greenwich, CT: JAI Press.

Pfeffer, J. 1981b. ***Power in organizations.*** Boston, MA: Pitman.

Pisker, H., & Vigiano, W. 1988. A study of whether uniforms help patients recognize nurses. ***Hospital and Community Psychiatry,*** 39(1): 78–79.

Pondy, L. R. 1983. The role of metaphors and myths in organization and in the facilitation of change. In L. R. Pondy, P. Frost, G. Morgan, & T. Dandridge (Eds.), ***Organizational symbolism:*** 157–166. Greenwich, CT: JAI Press.

Pondy, L. R., Frost, P. J., Morgan, G., & Dandridge, T. C. (Eds.) 1983. ***Organizational symbolism.*** Greenwich, CT: JAI Press.

Pratt, M. G. 1993. ***When actions speak louder than words: The behavioral enactment of ideological conflict among caregivers.*** Working paper, University of Illinois at Urbana-Champaign.

Pratt, M. G. 1994. ***The happiest, most dissatisfied people on earth: Ambivalence and commitment among Amway distributors.*** Unpublished dissertation, University of Michigan, Ann Arbor.

Pratt, M. G., & Dutton, J. E. 1996. ***Owning up or opting out: On ambivalence, identity extension, and collective action.*** Working paper, University of Illinois at Urbana-Champaign.

Rafaeli, A., Dutton, J., Harquail, C. V., & Mackie-Lewis, S. 1997. Navigating by attire: The use of dress by female administrative employees. ***Academy of Management Journal,*** 40: 9–45.

Rafaeli, A., & Pratt, M. G. 1993. Tailored meanings: On the meaning and impact of organizational dress. ***Academy of Management Review,*** 18: 32–55.

Ribeiro, A. 1986. ***Dress and morality.*** London: B. T. Batsford.

Roach-Higgins, M. E., & Eicher, J. 1992. Dress and identity. ***Clothing and Textiles Research Journal,*** 10(4): 1–8.

Rosen, M. 1985. Breakfast at Spiro's: Dramaturgy and dominance. ***Journal of Management,*** 11: 31–48.

Sasseen, J., Neff, R., & Sansoni, S. 1994. The winds of change blow everywhere. ***Business Week,*** October 17: 92–93.

Scheid-Cook, T. 1988. Mitigating organizational contradictions: The role of mediatory myths. ***Journal of Applied Behavioral Science,*** 24: 161–171.

Schein, E. 1985. ***Organizational culture and leadership.*** San Francisco: Jossey-Bass.

Schein, E. 1990. Organizational culture. ***American Psychologist,*** 45: 109–119.

Schein, E. 1991. What is culture? In P. Frost, L. F. Moore, M. R. Louis, C. C. Lundberg, & J. Martin (Eds.), ***Reframing organizational culture:*** 243–253. Newbury Park, CA: Sage.

Siegel, H. 1968. The nurse's uniform: Symbolic or sacrosanct? ***Nursing Forum,*** 7: 315–323.

Simmel, G. 1971. ***On individuality and social forms: Selected writings.*** Chicago: University of Chicago Press.

Singer, J. E., Brush, C. A., & Lublin, S. C. 1965. Some aspects of deindividuation: Identification and conformity. ***Journal of Experimental Social Psychology,*** 1: 356–378.

Smircich, L. 1983. Organizations as shared meanings. In L. R. Pondy, P. Frost, G. Morgan, & T. Dandridge (Eds.) ***Organizational symbolism:*** 55–65. Greenwich, CT: JAI Press.

Smith, D. 1968. Dogmatism, cognitive consistency, and knowledge of conflicting facts. ***Sociometry,*** 31: 259–277.

Smith, B., & Nerone, B. J. 1986. Marketing a profitable nursing image: Recognizing that image is power. ***Imprint,*** 33(1): 26–30.

Solomon, M. 1986. Dress for effect. ***Psychology Today,*** 20(4): 20–28.

Solomon, M. 1987. Standard issue. ***Psychology Today,*** 21(12): 30–31.

Solomon, M. R., & Douglas, S. P. 1983. The power of pinstripes. ***Savvy,*** March: 59–62.

Solomon, M., & Douglas, S. 1987. Diversity in product symbolism: The case of female executive clothing. ***Psychology and Marketing,*** 4: 184–212.

Sproull, L. 1981. Beliefs in organizations. In P. C. Nystrom & W. H. Starbuck (Eds.), ***Handbook of organizational design,*** vol. 2: 203–224. London: Oxford University Press.

Squire, G. 1974. ***Dress and society 1560–1970.*** New York: Viking.

Stavros, M. K., & Lyden, D. 1988. Working together: The health care team. In A. J. Punwar (Ed.), ***Occupational therapy: Principles and practices:*** 71–81. Los Angeles: Williams & Wilkins.

Stone, G. P. 1962. Appearance and the self. In R. A. Marshall (Ed.), ***Human behavior and social processes: An interactionist approach:*** 86–118. Boston: Houghton-Mifflin.

Strauss, A. L., & Corbin, J. 1990. ***Basics of qualitative research: Grounded theory procedures and techniques.*** Newbury Park, CA: Sage.

Stubbs, D. A., Buckle, P. W., Hudson, M. P., Butler, P. E., & Rivers, P. M. 1985. Nurses' uniforms: An investigation of mobility. ***Journal of Nursing Studies,*** 22(3): 217–229.

Summers, A. 1984. Images of the nineteenth century nurse. ***History Today,*** 34 (December): 40–42.

Summers, A. 1989. Ministering angels. ***History Today,*** 39 (February): 31–37.

Swann, W. B. 1987. Identity negotiation: Where two roads meet. ***Journal of Personality and Social Psychology,*** 53: 1038–1051.

Tajfel, H., & Turner, J. C. 1985. The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), ***Psychology of intergroup behavior:*** 7–24. Chicago: Nelson-Hall.

Thomas, J., & Gioia, D. 1991. ***Sensemaking in top management teams: Image and identity in strategic issue interpretation.*** Working paper, Pennsylvania State University, University Park.

Trauer, T., & Moss, A. V. 1980. Psychiatric patients' opinions of nurses ceasing to wear uniforms. ***Journal of Advanced Nursing,*** 5: 47–53.

Trice, H. 1996. ***Occupational subcultures in the workplace.*** Ithaca, NY: ILR Press.

Trice, H., & Beyer, J. 1984. Studying organizational cultures through rites and ceremonials. ***Academy of Management Review,*** 9: 653–669.

Trice, H., & Beyer, J. 1993. ***The cultures of work organizations.*** Englewood Cliffs, NJ: Prentice-Hall.

Turner, J. C. 1987. ***Rediscovering the social group: A self-categorization theory.*** New York: Basil Blackwell.

Tversky, A., & Kahneman, D. 1974. Judgement under uncertainty: Heuristics and biases. ***Science,*** 185: 1124–1131.

Van de Ven, A. 1985. Spinning on symbolism: The problem of ambivalence. ***Journal of Management,*** 11: 101–102.

Van Maanen, J., & Barley, S. R. 1984. Occupational communities: Culture and control in organizations. In B. M. Staw & L. L. Cummings (Eds.), ***Research in organizational behavior,*** vol. 6: 287–365. Greenwich, CT: JAI Press.

Veblen, T. 1899. ***The theory of the leisure class: An economic study of institutions.*** New York: MacMillan.

Watts, D. T., McCaulley, B. L., & Priefer, B. A. 1990. Physician-nurse conflict: Lessons from clinical experience. ***Journal of the American Geriatrics Society,*** 38: 1151–1152.

Weick, K. 1991. The vulnerable system: An analysis of the Tenerife air disaster. In P. Frost, L. F. Moore, M. R. Louis, C. C. Lundberg, & J. Martin (Eds.), ***Reframing organizational culture:*** 117–130. Newbury Park, CA: Sage.

Weigert, A., & Franks, D. 1989. Ambivalence: A touchstone of the modern temper. In D. D. Franks & E. D. McCarthy (Eds.), ***The sociology of emotions: Original essays and research papers:*** 205–227. Greenwich, CT: JAI Press.

Welcomer, S. A., Gioia, D. A., & Kildruff, M. 1993. ***Seizing the moral high ground: The symbolic construction of a crusade.*** Paper presented at the annual meeting of the Academy of Management, Atlanta.

Yunker, G. W. 1994. Action research and organizational development. ***Personnel Psychology,*** 47: 187–189.

APPENDIX
Interview Schedule

1. Can you tell me about the staff on the unit?
   Total number of nurses (full- and part-time)
   Breakdown by type (RNs, LPNs, NRPs, aides, assistants, etc.)
   What other people work on the unit other than nurses?
2. Can you tell me about the patients?
   How many?
   We understand there are different types of patients?
   Is there anything we should know about the families?

3. Anything else we should know about the unit?
4. Can you tell me about your job on the unit?
   What is your job title? What does your job entail?
   How long have you worked in this position? On this unit?
   How long have you worked in nursing?
5. Can you tell me how the issue of dress on the unit started?
   When was the issue first brought to your attention?
   How did you learn about it?
   Can you think of key events that preceded it?
   Was there anything unusual about the unit at the time?
   How/where was the issue raised? By all the nurses? Only a few?
   Why do you think it was raised?
6. How do you think nurses on the unit should be dressed? Why?
7. How do you feel about the dress issue? Why?
8. How do you think the nurses on the unit feel? Why?
9. How do you think your management feels about it?
10. How do you think this issue will be resolved? Why?
11. How would you like to see this issue resolved?
12. Is there anything else you would like to add?

Thank you very much for your time and cooperation!

APPENDIX B
Identity Themes and Data Sources

Identity Theme	Dress Code Task Force	Unobtrusive Observations	Semistructured Interviews			Free Associations	Formal Documents
			Nurses	Unit Professionals	Patients		
Street clothes and rehabilitation mission	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scrubs and acute care mission	Yes	Yes	Yes	Yes	Yes	Yes	No
Street clothes and rehabilitation instructor roles	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scrubs and acute care roles	Yes	Yes	Yes	Yes	No	Yes	No
Street clothes and well patients	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scrubs and sick patients	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Street clothes and low status	Yes	No	Yes	Yes	Yes	No	No
Scrubs and high status	Yes	No	Yes	Yes	Yes	Yes	No
Street clothes and centralized decision making	Yes	No	Yes	Yes	No	No	Yes
Scrubs and participative decision making	Yes	No	Yes	Yes	Yes	No	No

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"THAT'S NOT MY JOB": DEVELOPING FLEXIBLE EMPLOYEE WORK ORIENTATIONS

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It is widely argued that modern manufacturing settings require employees to adopt a customer-focused strategic orientation and a broad and proactive role orientation. Yet empirical investigation of this issue is lacking. We describe the development of measures of both types of work orientation and present two field studies that examine how these orientations change. Findings suggest that, although the implementation of new production practices can in itself lead to the development of a strategic orientation appropriate to modern manufacturing, change toward a more flexible role orientation additionally requires the introduction of autonomous forms of working.

There can be no doubt that major change is taking place in manufacturing. Traditional priorities and practices, epitomized by mass production, are being challenged by a new paradigm. This is evident from the variety of terms that have recently been coined, such as "lean production" (Womack, Jones, & Roos, 1990), "world class manufacturing" (Schonberger, 1986), "integrated manufacturing" (Dean & Snell, 1991), "time-based flexible manufacturing" (Alasoini, 1993), and "new wave manufacturing" (Storey, 1994). These terms reflect different emphases, but they are bound together by a common heritage and meaning. First, they emerged against the background of worldwide economic recession and the pressure this recession placed on companies to enhance their competitiveness. Second, these terms embody the strategic view that such competitiveness is best achieved through increased responsiveness to customer demand, by controlling costs whilst simultaneously improving quality and tailoring output more specifically to customer requirements. Finally, all represent approaches that rely heavily on enabling technologies and techniques, among which just-in-time (JIT) and total quality management (TQM) are prominent.

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A key question raised by this manufacturing zeitgeist is whether JIT, TQM, and other enabling initiatives are sufficient in themselves to realize the new competitive goals, or whether wider individual and organizational change is also necessary. Opinion strongly supports the latter conclusion. Turnbull, for example, contended that "the organization and management of employees, together with their attitudes, are perhaps the most important (and certainly the most idiosyncratic) resource on which productivity and competitive performance ultimately depend" (1986: 203). Similarly, Taira noted that "inertia" threatens adjustment to the new manufacturing approach because fundamental "change in attitudes, habits and outlook" (1996: 102) is required.

Inherent in what has been a very general debate on the organizational implications of the new manufacturing paradigm are a number of more particular, but as yet largely untested, assumptions. The first of these that is of interest here is that success depends on understanding and internalization by shopfloor employees of the new strategic objectives. In other words, there is an assumption that there is a need for a new *strategic orientation* among employees. This assumption involves a move away from a traditional view that it is sufficient for shopfloor employees to restrict their effort to maximizing volume. Instead, a strategic orientation involves employees' endorsing key strategies such as increased flexibility, the minimization of inventory control, preventive problem solving, continuous improvement, and other principles of modern organizations. If employees do not develop such an orientation, it is unlikely that their efforts will be focused on reducing costs, improving quality, or increasing responsiveness to customers. Linked to this assumption is the view that the development of such a strategic orientation among employees can be achieved in a relatively straightforward way. That is, it is assumed that the implementation of the relevant technologies and techniques combined with the appropriate training and communication will be sufficient to shape employees' strategic beliefs in the anticipated manner (Hayes, Wheelwright, & Clark, 1988). This assumption is consistent with observations made in manufacturing settings that employees endorse strategic views under these conditions (e.g., Taira, 1996) as well as with well-established evidence from social psychological studies that "persuasive communication" can change people's belief structures (Fishbein & Azjen, 1975).

The notion of strategic orientation is particularly significant in that it provides the springboard for the second assumption, that it is also necessary for individuals to generalize that set of beliefs to their own work roles. It is one thing for employees to endorse a set of general organization-wide principles and quite another for them to carry those through to the extent that they change their views of their own work responsibilities. In other words, a clear message in the literature is that change in strategic orientation is not sufficient and that employees also need to develop new and complementary *role orientations.* More specifically, it has been suggested that employees need to embody a broader and more proactive approach to their roles in

which they both own, or feel responsible for, work beyond their immediate operational tasks (an aspect of role orientation that we refer to as "production ownership") and recognize the importance of acquiring and using a wide range of skills and knowledge to enable them to contribute at that broader level (an aspect of role orientation we refer to as the "importance of production knowledge"). This concept of role orientation aligns with Davis and Wacker's (1987) description of roles as opposed to jobs (cf. Ilgen & Hollenbeck, 1991), which they expressed as follows: "In a narrow 'job-description sense,' one's job is a particular task assignment that may change daily; in a broad 'role' sense, one's job is to help carry out the responsibilities assigned to the team, to participate in team decisions, to cross-train, and to use one's judgment to contribute to the team's productivity, maintenance, and development" (Davis & Wacker, 1987: 433). Many others have suggested that it is just such change in the ways employees see their own work that is a key element of success in modern manufacturing (e.g., Bratton, 1993; Cummings & Blumberg, 1987; Hayes et al., 1988; Lawler, 1992, 1994; Parker, Mullarkey, & Jackson, 1994; Tailby & Turnbull, 1987; Zammuto & O'Connor, 1992).

Associated with the above views, however, is a further assumption of key interest in this article; that the required role orientation will only develop if employees are also given more autonomy over their work. It has long been recognized that tightly defined jobs with low autonomy tend to encourage narrow perspectives in their incumbents. Baldamus, for instance, described how exposure to highly repetitive jobs creates a state of traction (or inertia) that operators then seek to maintain: "He [the operator] will strive to obtain a job where traction is relatively strong and interferences to traction small. He will also tend, normally, to take the external situation for granted . . . to follow the line of least resistance" (1961: 65). More recently, Karasek and Theorell noted that frequently observed responses, such as "That's not my department" and "It's not good to rock the boat around here," reflect a narrow role orientation that derives from "learned responses to early job experiences in which taking initiative and using extra skill and judgment were severely penalized as overstepping the bounds of one's (unnecessarily restricted) authority" (1990: 174). Many others have commented on the narrowing effect a lack of autonomy has on people's perceptions of their work roles (e.g., Bruggeman, Groskurth, & Ulich, 1975; Frese, 1982; Wood, 1990). These observations lie behind the repeated calls for the implementation of high involvement or empowerment strategies in support of modern manufacturing (e.g., Buchanan & McCalman, 1989; Lawler, 1992, 1994; Susman & Chase, 1986; Taira, 1996; Zammuto & O'Connor, 1992). Aktouf, for example, argued that "the Tayloristic vision of employees as a cost factor and a passive cog has now become a liability that must be discarded as quickly as possible to make room for a humanistic vision, whereby the employee is seen as an active and willing participant in the organization" (1992: 426). Similarly, Bratton suggested that management should "treat employees as a valued asset rather than a variable cost, see training and development as an asset,

and view empowerment and high trust employment relations as prerequisites to recruit and retain an effective and committed workforce" (1993: 398).

In short, a relatively coherent set of assumptions can be discerned. First, that the implementation of the new manufacturing practices will require and result in a change in strategic orientation among production employees and that this change will be facilitated by parallel efforts to enhance people's understanding of the new practices through processes such as communication and training. Second, that the success of the new approach will depend on a compatible change toward a broader role orientation on the part of shopfloor employees and that the development of that orientation will require the implementation of more autonomous forms of work organization.

Although the above assumptions may be plausible, they remain virtually untested. Moreover, they are not universally held. Some commentators believe that the new manufacturing initiatives will not result in the development of a more flexible work orientation by virtue of their intensification and de-skilling effects (e.g., Delbridge, Turnbull, & Wilkinson, 1992). Thus, these assumptions call out for empirical investigation. In this article, we focus on the facilitation of change in work orientations and investigate these basic propositions: (1) The introduction of new manufacturing initiatives, when accompanied by efforts to increase employee understanding by such means as communication and training, will lead to the development of a more appropriate strategic orientation among employees. And (2) efforts to increase understanding about new manufacturing initiatives will not be sufficient to allow employees to develop a broader and more proactive role orientation; such change additionally requires an increase in job autonomy.

This need for systematic research, however, highlights a particular difficulty. Despite the importance of strategic and role orientations within the debate on modern manufacturing, little attempt has been made to develop appropriate measures of either construct. Research has continued to focus on traditional affective-reaction outcome measures, such as job satisfaction and strain. Thus, the first step was to determine if strategic and role orientation could be measured. Only then would it be possible to move on to test propositions about whether these orientations change as a result of the introduction of modern manufacturing practices and more autonomous forms of work organization. The present article describes a sequence of three studies that followed this path.

STUDY 1: THE MEASUREMENT OF WORK ORIENTATION

The aim of the first study was to develop appropriate measures of work orientation. We set ourselves the goal of producing scales with good internal reliability for which we could demonstrate some initial construct validity. One of the major difficulties was that the discussion of work orientation in the relevant literature so far has been at a very general and ill-defined level. Thus, the starting point was to clarify the basic construct of work orientation and the major dimensions of relevance.

The Construct of Work Orientation

The general construct of orientation is related to such existing concepts as personal constructs (Kelly, 1955), schemata (Bartlett, 1932), and belief structures (Sproull, 1981), all of which are based on an underlying assumption that people have different constructions of the world and that these differences are meaningful. The concept of work orientation thus has a clear emphasis on how people construe their work roles and work environments, rather than on their affective reactions to the job or environment; concepts like job satisfaction and psychological well-being tap such reactions. Essentially, work orientation taps the cognitive or belief component of work attitudes rather than the affective component. The concept of work orientation can also be distinguished from the sociological construct of orientation toward "work in general" (Goldthorpe, Lockwood, Bechhofer, & Platt, 1968) by its focus on people's constructions of their work within a specific context. Work orientation is nevertheless broader than the specific skills and knowledge that are required for successful task performance, such as those included in an expert system model; knowledge of how to prevent a fault in a particular system is an example. Work orientation is also different from such concepts as proactive personality (Bateman & Grant, 1993) and higher-order need strength (Hackman & Oldham, 1976), which are assumed to be relatively stable personal dispositions. We argue that work orientations can change and develop in response to change in the external environment.

The concept of work orientation requires a referent, and in this case our referent was modern manufacturing. As discussed earlier, at least two types of work orientation are important in this context: strategic orientation and role orientation. These aspects and their relevance within modern manufacturing are described further.

Strategic orientation, the first type of work orientation, concerns employees' understanding and general acceptance of principles that derive from broader strategic objectives. For example, accepting the principle of learning new and different tasks is important if a company has a strategy of increasing flexibility. This concept of strategic orientation is particularly important within modern manufacturing as many of the strategies are based on principles that are fundamentally different from those inherent in traditional manufacturing. For example, Oliver and Davies (1990) described case studies of the implementation of cellular manufacturing and just-in-time in which problems occurred because the principles underlying these initiatives did not align with past assumptions (such as the modern principle that production is pulled by demand rather than pushed by resource capacity). Employees equated a stock of unfinished work with job security, so that the absence of a stock of visible work-in-progress was very threatening. Oliver and Davies suggested that what is required is not just a change in work practices but a change in thinking, from "just-in-case thinking to just-in-time thinking" (1990: 564). That is an example of what we mean by strategic orientation. Employees need to change the way they construe their work

environments in a way that is consistent with the relevant organizational strategies.

The second type of work orientation, role orientation, is related to strategic orientation in that much of the change in work roles results from the introduction of new organizational strategies. For example, the need for shopfloor employees to adopt the idea of relating to customers arises out of the need for greater responsiveness to customer demand. An understanding of the latter strategy will naturally facilitate the development of new role views. Nevertheless, although strategic orientation is about the general understanding of new strategies, role orientation is more explicitly concerned with people's actual acceptance of the effects of the strategies on their daily work activities. Thus, role orientation (or role perception, as Porter and Lawler [1968] called a similar construct), is defined in terms of the problems, tasks, and competencies an individual sees as relevant to his or her work role and effective performance of that role. Role orientation can thus be seen to represent the psychological boundary of a role. Note that our focus is on those problems, tasks, and competencies that an individual could reasonably be expected to include as part of his or her role, given the opportunities within the environment. Concepts such as organizational citizenship refer explicitly to behaviors that go beyond role requirements, such as volunteering for extra activities, sportsmanship, and civic virtue (Bateman & Organ, 1983).

We consider role orientation as having two aspects. The first, *production ownership,* concerns the work problems and goals that someone "owns" or feels responsible for. For example, an employee who sees his or her role exclusively in terms of operating a designated machine has narrow production ownership. By contrast, a much broader role orientation, or high production ownership, would be indicated by that individual's also feeling concern for high product quality, customer satisfaction, and working as part of a team. The second way of conceptualizing role orientation is the extent to which employees recognize the importance of gaining and using a wide range of skills and knowledge in order to perform effectively. Thus, a narrow role orientation is shown by someone who sees the most important performance requirement as "doing what I am told," and a broader, more proactive role orientation is shown by someone who recognizes that key competencies of a role include, for example, working effectively in a team and using personal initiative to prevent problems. We refer to this second aspect of role orientation as the *importance of production knowledge.*

In summary, we have conceptualized work orientation as a construct that includes at least two dimensions: people's beliefs about strategies that exist within their work environments (strategic orientation) and their beliefs about the boundaries of their specific work roles (role orientation). In turn, role orientation has two facets: production ownership and the importance of production knowledge. We turn now to the development of measures to assess strategic orientation and the two dimensions of role orientation.

Development of Scales to Assess Work Orientation

Stage 1: Item selection and content validity. We generated a large number of items from reading materials and from interviews with those involved in new and traditional manufacturing initiatives. Three raters then independently sorted the items into the categories of work orientation: strategic orientation, production ownership, and the importance of production knowledge. They were also asked to sort the role orientation items into further subcategories that we identified in the literature to ensure the concepts were adequately covered (these subcategories are explained below). We retained only items that were consistently coded and excluded those that duplicated others. To determine interrater agreement in the assignment of items, we calculated Cohen's (1960) kappa coefficient using the HANDY KAPPA program (Jackson, 1983). Kappa values were all greater than .60, the recommended minimum level (cf. Hill, 1991), and most were greater than .75, the median being .87. These results show the items were reliably assigned to the categories. *Z*-scores resulting from testing the hypothesis of no-more-than-chance agreement (Fleiss, 1971) were all statistically significant, showing that assignment to categories was significantly better than chance. Efforts were also made to ensure there were no gaps in covering the construct domain.

Stage 2: Scale formation and description. The items selected from stage 1 were summed to form a scale of strategic orientation and two scales to assess production ownership and the importance of production knowledge. The Appendix shows the full item wordings for each scale. Our focus was on ensuring that the measures adequately covered the domain of the construct, as established in stage 1. The scales and the instructions given to respondents were as follows:

Strategic orientation was tapped by a ten-item scale assessing endorsement of key modern manufacturing principles. Respondents were asked to rate, on a five-point scale, the extent of their agreement or disagreement with statements about relevant principles, such as inflexibility, preventive problem solving, inventory control, JIT production, and employee performance. All key principles relevant to the context were assessed with at least one item. An example (item 5) is: "It is important to keep making products, even if they go to stock rather than directly to customers," where disagreement with the statement is taken as showing an understanding of JIT principles. Because the items deliberately tapped a level of awareness and understanding of the principles, items were worded as the antithesis of the target belief, so that the "wrong" answer would seem plausible to people who did not have strong views or understanding. We summed ratings on the total set of items (with items reverse-coded) to obtain a score for strategic orientation.

The scale for the *production ownership* aspect of role orientation measures the range of production problems that people feel that they "own." Respondents were asked to indicate the extent of their personal concern

about the occurrence of each of nine problems on a scale ranging from 1 (to no extent) to 5 (to a large extent). A sample item is: "To what extent would it be of concern to you if the quality of products in your area was low?" To legitimize perceptions of nonconcern, the instructions stated that some problems might not be of concern to respondents but might rather belong within the domain of supervisors or managers. In developing the scale, we focused on three categories of problems, *goal achievement* (e.g., slow delivery times, customer dissatisfaction, poor product quality), *operational inefficiencies* (e.g., large amount of rework and in-progress inventory), and *work group cohesion and coordination* (e.g., conflicts, selection of new members, lack of skills).

The scale measuring the *importance of production knowledge,* the second aspect of role orientation, assesses whether employees recognize the importance for their effective performance of a broad range of skills, knowledge, and behavior. We focused on five categories of competencies that our experience and reading suggested are important for high performance in modern manufacturing: *cognitive activities* (e.g., anticipating problems, finding the root cause), *team working* (e.g., resolving conflicts, sharing ideas), *knowing local production requirements* (e.g., knowing how to schedule work, knowing work priorities), *understanding of wider manufacturing* (e.g., knowing company objectives), and *self-direction* (e.g., being self-motivated, using initiative). At least two items were developed to assess each of these categories, with a total for the scale of 15 items. A sample item is: "For you to perform effectively, how important is it to know about the whole production process?" Responses were on a scale ranging from "not at all important" (1) to "extremely important" (5).

Empirical Investigation of Reliability and Construct Validity

The empirical investigation had two aims: to establish basic psychometric properties and to provide a test of construct validity.

To enable the test of construct validity, we carried out the study within a traditional manufacturing company. A minimum requirement of work orientation measures is that they distinguish between staff members (i.e., supervisors and specialist staff) and shopfloor employees within a traditional manufacturing company. In such environments, employees have simple jobs with minimal autonomy in which they are expected to have concern only about their immediate day-to-day tasks. Staff members, in contrast, typically have jobs that involve decision-making, planning, and problem-solving elements. They are expected to show awareness and interest in the broader production process, as well as a more forward-thinking approach to production issues. Within modern manufacturing organizations, shopfloor employees, or operators, are essentially required to develop work orientations that resemble those traditionally held by supervisors. If the orientation measures do not discriminate between staff and employees within a traditional setting, they are unlikely to be sensitive to the changes in orientation for operators in modern manufacturing environments. The test of construct validity was thus

that, within the traditional manufacturing company at which the test was conducted, the work orientation scores of staff members should be significantly higher than those of operators.

Methods. The study took place within the production department of a medium-sized engineering company (about 200 employees) in the north of England. Although the company had introduced several new manufacturing methods to facilitate adjustment to market demands, it still operated under a traditional paradigm. The new methods it used were customer audits of quality, a computer-controlled production scheduling system (MRP-II), and the gradual introduction of single-operator machining cells. However, these changes did not involve any of the key features of JIT and TQM, were introduced in a nonstrategic manner, and were implemented with minimal emphasis on human resource issues. Only staff members were involved in discussions about changes, and even this involvement was limited. Employees had no training about the new initiatives, and there was no systematic means of communication. Moreover, the company introduced the changes whilst maintaining a traditional form of work organization based on Taylorist principles: machine operators had no influence over the scheduling of work, product designs, or the programming of CNC (computer numerically controlled) machines; quality inspection, machine set-up, and maintenance were carried out by separate shopfloor employees. Foremen performed a traditional supervisory role (e.g., coordinating work, allocating jobs), and production planners determined the scheduling of work and the routing of parts throughout the process.

Seventy-one employees completed questionnaires on their own time and handed them back to the researcher, who was one of the authors. All employees received feedback on the results. Complete data on all the key measures were received from 44 shopfloor employees and from 16 staff members, including 7 foremen, 5 production planners, and 4 production engineers. All respondents were men.

Results. The study showed that the scales have adequate psychometric properties. Estimates of internal reliability (Cronbach's alpha) were as follows: strategic orientation, .79, production ownership, .94, and importance of production knowledge, .93. These coefficients are all greater than .70, suggesting that the items within each scale are tapping the same construct and that each scale is sufficiently highly intercorrelated to be considered internally reliable. For each scale, the removal of any single item did not substantially increase the alpha coefficient, indicating that all items should be retained. The distributions of scores for the scales were not skewed and, as indicated by the mean scores, there were no ceiling or floor effects (strategic orientation, $\bar{x} = 3.43$, s.d. = 0.95; production ownership, $\bar{x} = 3.38$, s.d. = 1.10; and importance of production knowledge, $\bar{x} = 3.52$, s.d. = 0.89).

The work orientation measures were moderately related to one another, suggesting they tapped similar but not identical constructs. The correlation between the two role orientation measures, production ownership and the importance of production knowledge, was .59 ($p < .01$). The correlation

between strategic orientation and production ownership was .52 ($p < .01$), and the correlation between strategic orientation and the importance of production knowledge was .37 ($p < .01$). It should be noted at this point that in the subsequent studies correlations between the role orientation scales and strategic orientation did not exceed .45. Correlations between the two role orientation scales were generally greater (from .30 to .66), but these values are not likely to be problematic, given the high reliability of these scales.

At this stage, we should have performed a full factor analysis to examine the independence of the measures and to determine the appropriateness of the items within each measure. However, such an analysis was not possible in the current study (and in the subsequent studies) because of the small size of the sample. Our research approach was to conduct a set of well-defined studies that together lent support for the theoretical propositions rather than to conduct large-scale and less focused studies. Thus, we conducted a partial investigation of the independence of the measures by comparing the correlation between each item and the sum of the remaining items in that scale (the corrected item-total correlations) to the correlations between each item and the other scales.

Results of this analysis, which are shown in Table 1, provide evidence that the measures are independent from each other. As can be seen, the mean corrected item-total correlations are all above .45 and are higher than mean

TABLE 1
Corrected Item-Total Correlations[a]

	Strategic Orientation			Production Ownership			Importance of Production Knowledge		
Item	Item-Total	Item-PO	Item-IPK	Item-Total	Item-IPK	Item-SO	Item-Total	Item-PO	Item-SO
1.	.60	.32	.00	.79	.48	.37	.72	.23	.39
2.	.63	.30	.11	.76	.26	.23	.53	.23	.06
3.	.35	.25	.00	.75	.26	.28	.71	.46	.30
4.	.71	.30	.18	.72	.64	.32	.86	.54	.27
5.	.37	.09	.04	.77	.52	.30	.75	.52	.28
6.	.33	.15	.16	.66	.37	.31	.64	.44	.26
7.	.31	.28	.19	.63	.54	.32	.81	.54	.27
8.	.44	.37	.32	.79	.53	.45	.77	.48	.19
9.	.48	.36	.43	.73	.48	.47	.78	.52	.34
10.	.51	.44	.32				.49	.40	.19
11.							.44	.32	.12
12.							.57	.44	.01
13.							.72	.43	.26
14.							.57	.38	.58
15.							.63	.45	.42
Mean r	.48	.27	.18	.73	.45	.34	.67	.44	.26

[a] PO = production ownership, IPK = importance of production knowledge, and SO = strategic orientation.

correlations of items with the other scales. For example, each production ownership item is correlated at a level greater than .60 with the total scale (mean r = .73), and these items have lower correlations with the strategic orientation scale (mean r = .34) and with the importance of production knowledge scale (mean r = .45). In addition, as would be expected, since these are both measures of role orientation, there are higher item-scale correlations between production ownership and the importance of production knowledge than between either of these measures and strategic orientation.

Turning to the test of construct validity, we expected that staff members (supervisors and specialists) would have significantly higher scores on the work orientation scales than shopfloor employees. The data supported this expectation (see Table 2). Staff members scored significantly higher than shopfloor employees on strategic orientation ($p < .001$), production ownership ($p < .001$), and importance of production knowledge ($p < .001$). These findings suggest that the work orientation measures fulfill the minimal requirement of distinguishing between staff members, who have broader, more autonomous jobs and greater exposure to strategic principles, and operators, who have traditional narrow jobs and limited exposure to information about strategies. (Note that we found consistent results when we compared the work orientation scores of supervisors and operators for the sample in study 2, which is reported below.)

In addition to the above validity check, there was a clear convergence between the questionnaire results and the interviews conducted with shopfloor employees. Their comments revealed a reactive, accepting attitude to problems (e.g., "You're bound to scrap an odd one occasionally, it's inevitable like") and nonstrategic perspectives on production goals and initiatives (e.g., seeing customers as "just names on sheets"). They also had a narrow focus on the immediate set of tasks (e.g., "I'm responsible for turning my work out and making sure it's turned out properly. That's about it really"), consistent with their low role orientation scores. The newly developed

TABLE 2
Group Means and Comparisons, Study 1[a]

Variable	Shopfloor Employees	Staff Members	t[b]
Strategic orientation	3.24	3.93	−4.11***
	(0.63)	(0.37)	
Role orientation: Production ownership	3.06	4.22	−4.04***
	(1.01)	(0.86)	
Role orientation: Importance of production knowledge	3.22	4.34	−5.21***
	(0.85)	(0.23)	

[a] For shopfloor employees, n = 44; for staff members, n = 16. Standard deviations are in parentheses.

[b] df = 55–58.

*** $p < .001$

scales thus appear to function as viable indicators of rich and fundamental views elicited in interviews.

Summary of Study 1

New measures to assess the constructs of strategic orientation and role orientation were developed. In an initial study, the strategic orientation scale and the two scales measuring role orientation (production ownership and the importance of production knowledge) were shown to be internally reliable and to fulfill the minimal requirement of distinguishing between members of different role groups. There was thus sufficient evidence that the orientation measures were adequate for the purpose of proceeding with further studies.

We now turn to the key issue of concern in this article: the investigation of change in work orientation occurring as a result of the introduction of new manufacturing initiatives.

STUDY 2: A NEW MANUFACTURING INITIATIVE WITH NO CHANGE IN EMPLOYEE AUTONOMY

This study was a longitudinal examination of the effects on employees' work orientation of a company's introduction of a JIT-TQM initiative that was accompanied by attempts to increase employees' understanding of strategic principles through such means as training and communication but that did not involve any change in employees' autonomy. As discussed earlier, under these circumstances we would expect a change in strategic orientation, but not one in role orientation.

The study took place within the assembly section of a company that designs and manufactures vehicle seats and seat mechanisms for car manufacturers in the United Kingdom and Europe. To improve its responsiveness to customer demands, the company had reorganized production into ten product-based cells. However, to achieve a high level of performance with minimal yearly price increases, management decided to implement further aspects of JIT and TQM within the assembly area of the production cells. The main focus of the initiative was to use operator expertise to attack and remove non–value-added activities—those that did not directly contribute to the finished product—within the production process. Doing this involved training employees in principles and methods of JIT (the training package was modeled on the Toyota production system described by Monden [1983]) and involving representative employees in the process of redesigning work flows to remove waste.

Interviews and observation suggested that, prior to the introduction of the initiative, operators did not work flexibly and control was concentrated in the hands of line and cell leaders. With the exception of involving some employees in planning the changes, management neither intended nor attempted to increase employee autonomy with the introduction of the JIT-TQM initiative. There was no change in the section's authority structure or in other key aspects of work, as shown by this comment from an assembler

who had experienced the changes: "My job is still the same as it always has been with the exception of a little less room in some areas and a little more in others."

The initiative was introduced in two stages. We took two sets of measures, six months apart, and began our assessment at a point when some employees (the "early change group") had started the initiative but others (the "later change group") had yet to start. The group of primary interest was the later change group (n = 20), whose members were surveyed both before and after the initiative was introduced in their work area. The early change group (n = 15) provided a natural comparison. Table 3 shows the relationship between the timing of interventions and the measurement points.

Hypotheses

We have argued that change in strategic orientation is not dependent on enhanced autonomy but develops as a result of organizational attempts to increase employee understanding and acceptance of new initiatives. Given that the specific initiative studied involved continual employee training and communication, our first hypothesis was that there would be significant increases in strategic orientation scores for the later change group. As the early change group continued to receive communication and training in JIT-TQM principles, we also predicted an increase in scores for these employees.

Our secondary hypothesis was that if general exposure to information about JIT-TQM and its principles serves to enhance people's strategic awareness, then those employees exposed to change for the longest time (i.e., the early change group) should have higher scores on strategic orientation than the later change group. These hypotheses are summarized as follows:

> *Hypothesis 1a. There will be significant increases in strategic orientation scores for both the later change group and the early change group.*
>
> *Hypothesis 1b. The early change group, having experienced the JIT-TQM initiative longer, will have significantly higher strategic orientation scores than the later change group.*

TABLE 3
Design of Study 2: Introduction of a JIT-TQM Initiative without Enhanced Autonomy[a]

	Month									
Group[b]	0	1	2	3	4	5	6	7	8	9
Early change group	X			O						O
Later change group				O			X			O

[a] X = introduction of the initiative; O = a measurement point.
[b] Early change group n = 15; later change group n = 20.

Given that the introduction of the JIT-TQM initiative did not involve increased autonomy (and we conducted analyses to check this), there was no reason to expect an increase in role orientation scores for the later change group. Similarly, there was no reason to expect that the role orientation scores of the early change group would be higher than those for the later change group.

Methods

Measures. Employee work orientation was assessed using scales of *strategic orientation, production ownership,* and the *importance of production knowledge* as in the initial study, with the wording of items adapted to customize them for the specific context of the company used as the site of study 2 (see the Appendix). The mean alpha coefficients across the two time points were .80 for strategic orientation, .80 for production ownership, and .87 for the importance of production knowledge. The correlation between the two measures of role orientation, production ownership and the importance of production knowledge was .30 ($p < .01$) at time 1 and .50 ($p < .01$) at time 2. The correlation between production ownership and strategic orientation was .39 ($p < .01$) at time 1 and .35 ($p < .05$) at time 2. The correlation between the importance of production knowledge and strategic orientation was .17 at time 1 and .06 at time 2.

Jackson, Wall, Martin, and Davids's (1993) measures of job control developed especially for production environments were used to examine the effects of the initiative on autonomy. Timing control assesses the extent to which an individual has the opportunity to determine the scheduling of his or her work, and method control assesses the extent to which an individual has choice in how to carry out tasks. These scales were shown to have adequate internal reliability and test-retest reliability and to discriminate between different jobs in two samples (Jackson et al., 1993). In this study, we combined the scales to form one more parsimonious scale, which we labeled *task control.* Cronbach's alpha coefficient of internal reliability, averaged over the two measurement periods, was .81. An additional eight-item measure of autonomy, *boundary control,* was also used. This measure assesses the extent to which people have control over boundary activities, such as carrying out routine maintenance and selecting new employees. The average alpha coefficient of the scale within the current study was .80.

Procedures and sample. Questionnaires were administered by the researchers to small groups of employees during work hours. Confidentiality was emphasized, and the study was described as an independent evaluation of the effects of the JIT-TQM initiative. Response rates were high (approximately 80 percent at each measurement occasion). There were 35 employees who had complete data at both periods, 15 in the early change group and 20 in the later change group. The mean age of respondents was 36.8 years; their mean length of time in the company was 4.3 years; and their mean length of

time in their current job was 2.7 years. All respondents were men. There were no statistically significant differences between the groups with regard to these demographic variables.

Results and Discussion

As expected, the JIT-TQM initiative did not affect levels of employee autonomy. That is, there were no significant increases in perceptions of task control or boundary control for either group. The predictions outlined earlier thus stand.

Table 4 shows means and standard deviations for all work orientation variables at each time and results of repeated-measures analyses of variance for each dependent variable. Simple effect analyses, which examine change over time separately for each group, were considered most appropriate since we made precise predictions about the patterns of change expected for each group. We used one-tailed tests since the hypotheses concerned change in a specified direction.

The main hypothesis (Hypothesis 1a) was supported. Strategic orientation scores significantly increased within both the early change group ($p < .001$) and the later change group ($p < .05$).

Hypothesis 1b was supported in that the early change group had higher strategic orientation scores than the later change group at both measurements (although these differences were only significant at time 2). Similarly, as would be expected, the increase was greater within the early change group (which had already had some exposure to the JIT-TQM initiative before the study's first measurement point) than for the later change group (which experienced this initiative during the course of the study). Taken together,

TABLE 4
Means and Simple Effect Tests of Work Orientation, Study 2[a]

Variable	Later Change Group			Early Change Group		
	Time 1	Time 2	F^b	Time 1	Time 2	F^b
Strategic orientation	3.08	3.22	3.58*	3.32	3.71	20.24***
	(0.70)	(0.62)		(0.62)	(0.63)	
Role orientation: Production ownership	3.07	3.08	<1	3.22	3.45	1.34
	(0.79)	(0.76)		(1.07)	(1.04)	
Role orientation: Importance of production knowledge	3.74	3.56	4.57[c]	3.76	3.54	4.95[c]
	(0.55)	(0.46)		(0.48)	(0.46)	

[a] Later change group $n = 20$; early change group $n = 15$. Standard deviations are in parentheses.

[b] $df = 1, 33$.

[c] Since the hypotheses only concerned an increase in scores, these changes were not significant. With a two-tailed test, they would be significant with an alpha of .01.

* $p < .05$, one-tailed test

** $p < .01$, one-tailed test

*** $p < .001$, one-tailed test

these results suggest that the increase in strategic orientation scores relates in some way to the introduction of the JIT-TQM initiative rather than simply reflecting a testing effect.

Regarding change in role orientation scores, consistent with our expectations, there was no significant increase for the later change group. More specifically, there was no change in production ownership and a significant decrease in the importance of production knowledge ($p < .01$). Also consistent with the framework, there were no significant differences between the early change group and the later change group on either role orientation measure at time 1 or time 2.

Thus, the implementation of this manufacturing initiative led to the development of a strategic orientation more appropriate to modern manufacturing. However, the results obtained were consistent with the view that employees experiencing the initiative but no change in autonomy would not develop a broader, more proactive role orientation. Indeed, their scores on the importance of production knowledge decreased, indicating they attached less importance to various skills and types of knowledge that would enable high performance; this outcome probably reflects the intensification and narrowing of jobs reported in interviews by some operators.

Thus far, results are consistent with the general proposition that strategic change involving attempts to increase employee understanding can bring about the development of a more appropriate strategic orientation and are also consistent with the proposition that change in autonomy is needed for change in role orientation. However, to test the latter proposition more fully, we needed evidence from an organization in which strategic change was combined with the introduction of more autonomous jobs. The next section presents such a case.

STUDY 3: A NEW MANUFACTURING INITIATIVE INVOLVING ENHANCED AUTONOMY

This study examined the effect of the introduction of a JIT-TQM initiative that, for most production employees, was accompanied by enhanced autonomy. We thus expected to see the development of a broad, proactive role orientation as well as a more appropriate strategic orientation for these employees. For some comparison groups of employees, alternative outcomes were predicted.

The study was conducted in an American-owned electronics company in the United Kingdom that designed and produced control equipment for use in process industries. The company was medium-sized, with about 170 employees in manufacturing. It had been under increasing pressure from customers to improve quality and reduce delivery times without increasing the cost of products. The company had thus introduced a series of manufacturing initiatives. Our focus was on the production department, where there were about 65 employees directly engaged in making and testing printed circuit boards and assembling these into customized control sys-

tems. The work was characterized by the production of small batches of a wide variety of products (about 230 product types). The first initiative to affect these employees was the introduction of TQM. All employees attended training courses, and great emphasis was put on getting products "right the first time." This training was followed by a pilot project, the introduction of a product cell. In a product-cell system, employees are grouped into product-based rather than functional cells in order to facilitate the smooth flow of products that is necessary for JIT production. The success of the pilot project then led the organization to introduce product cells across the whole shopfloor. This study focused on the introduction of product cells, an initiative that was an extension of TQM and the first phase of JIT within the company.

In contrast to the initiative in previous study, this JIT-TQM initiative integrally involved devolution of control to employees. Autonomous work teams were formed around the product cells, and multiskilled employees were given the authority to manage day-to-day activities involved in meeting production targets. Quality inspection became the responsibility of the team, and those originally employed as inspectors became a separate group of "quality auditors" who monitored processes rather than products. Responsibility for testing was also devolved to the team although, in contrast to quality personnel, the highly skilled test engineers were integrated into product-cell teams and were expected to become multiskilled. Teams developed their own publicly displayed charts of their work schedules, primary performance indicators, and skill matrixes; they also recorded their own absence data. The extent of autonomy was similar to that in the high-performance work teams described by Buchanan and McCalman (1989) and recommended by others (e.g., Lawler, 1992).

Overall, the adoption of the JIT-TQM initiative proved very successful for the company. Lead times were reduced from 14 weeks to two days; inventory costs were reduced to 20 percent of the initial costs; delivery integrity (meeting customer delivery dates) was improved from 50 percent to 97 percent, and quality (monitored in terms of zero-defect boards and quality yield) was substantially improved.

Three groups within the sample are of specific interest here. The first group is the pilot enrichment group ($n = 7$), which consisted of employees who were reorganized into the pilot project product cell. The reorganization meant a substantial change in their work roles, including an increase in autonomy. The second group, the main enrichment group, consisted of operators previously in conventional jobs who were formed into autonomous work groups over the period of the study ($n = 32$). The third group, the de-skilled specialist group, consisted of specialist test engineers whose prior skilled role was impoverished by the movement to product-cell teams ($n = 7$). The test engineers were integrated into the product cells and expected to undertake a broader range of tasks, but in practice this meant they worked with a narrower range of products and had less opportunity to use their technical skills. Table 5 shows the design of the study.

TABLE 5
Design of Study 3: Introduction of a JIT-TQM Initiative with Varied Effects on Autonomy[a]

	Month									
Group[b]	0	3	6	9	12	15	18	21	24	27
Pilot enrichment group	X_1	O								O
Main enrichment group		O	X_1							O
De-skilled specialist group		O	X_2							O

[a] X_1 = introduction of the JIT-TQM initiative, with enhanced autonomy; X_2 = introduction of the initiative with de-skilling of jobs. O = a measurement point.

[b] Pilot enrichment, $n = 7$; main enrichment, $n = 32$; de-skilled specialist, $n = 7$.

Hypotheses

We expected that each group would develop a strategic orientation more appropriate to the new manufacturing methods as all employees received education and communication relevant to the initiative during the course of the study. Nevertheless, we also expected that, at the start of the study, members of the pilot enrichment group would have a more appropriate strategic orientation than those in the main enrichment group. At this time, employees in the pilot group had already been extensively involved in setting up the product cell and had received substantial training. For example, in the early stages of the team's development, engineers, supervisors, and managers worked closely with team members to coach them in the new ways of working. Thus,

> *Hypothesis 2a. There will be an increase in strategic orientation scores over time for all groups.*

> *Hypothesis 2b. At time 1, employees in the pilot enrichment group will have significantly higher strategic orientation scores than those in the main enrichment group.*

In relation to role orientation, we made the following more precise predictions: We expected no change over time in role orientation for the pilot enrichment group and for the de-skilled specialist group, because no change in autonomy occurred during the measurement span of the study for either group; and we predicted an increase in role orientation scores for the main enrichment group following the enhancement of autonomy that occurred after the first measurement. Further, since members of the pilot enrichment group were already working as a semiautonomous team prior to the first measurement occasion, we predicted that role orientation scores would be higher at time 1 for this group than for the main enrichment group. Thus,

> *Hypothesis 3a. There will be an increase in role orientation scores for the main enrichment group but not for the pilot enrichment group or the de-skilled specialist group.*

Hypothesis 3b. At time 1, employees in the pilot enrichment group will have significantly higher role orientation scores than those in the main enrichment group.

Methods

Measures. We assessed employee work orientation by scales measuring strategic orientation, production ownership, and the importance of production knowledge in the same way as in the previous studies, allowing for contextual variations (see the Appendix for the slight variations in specific item content). We estimated internal reliabilities using Cronbach's alpha coefficient and averaged these over time 1 and time 2. Mean reliabilities for strategic orientation, production ownership, and the importance of production knowledge were .72, .88, and .87, respectively. The correlation between the two measures of role orientation (production ownership and the importance of production knowledge) was .66 ($p < .01$) at time 1 and .31 ($p < .05$) at time 2. The correlation between production ownership and strategic orientation was .42 ($p < .01$) at time 1 and .29 ($p < .05$) at time 2. The correlation between the importance of production knowledge and strategic orientation was .23 ($p < .05$) at time 1 and .26 ($p < .05$) at time 2. Autonomy was assessed by the same task control and boundary control scales used in study 2. Mean internal reliabilities were .82 and .72 for task control and boundary control, respectively.

Procedures and sample. Questionnaires containing the above measures were administered on two occasions. Time 1 occurred after the pilot group had been formed but before product cells were put in place in the rest of the assembly area. Time 2 occurred 23 months after the first measurement. In each case, members of the research team administered questionnaires to small groups of employees (up to 15 at a time) during work hours, and confidentiality was emphasized. Response rates were high (at least 80 percent) for each administration. Sixty-three employees completed the survey at time 1, and 53 employees completed it at time 2. However, not all employees were available at both times because of holidays, illness, turnover, or production pressures. The final sample used here consists of 46 individuals who provided complete data on all variables on both measurement occasions.

The mean age of respondents was 34.6 years, and their mean length of time in the company was 3.6 years. No significant differences were found between groups on either variable. The sole demographic difference was on gender: the proportions of women in the pilot enrichment group and the de-skilled specialist group were much lower (30% and 20%, respectively) than that in the main enrichment group (70%).

Results

This section has three parts. First, we examine changes in autonomy in order to check our assumption that the introduction of product-cells and autonomous work groups did result in an increase in worker autonomy for

the enrichment groups. Second, we consider patterns of change and group differences in strategic orientation. Finally, we look at results for the role orientation scales. A separate repeated-measures analysis of variance was conducted for each variable. The statistical tests used were simple effect tests of change over time for each group. One-tailed tests were used since the hypotheses concerned change in a specified direction.

As expected, the only group to report an increase in autonomy over the time frame of the study was the main enrichment group. In this group, there was a significant increase in scores for both task control ($p < .001$) and boundary control ($p < .001$). There was no significant change in autonomy for the pilot enrichment group (for whom jobs were changed before the first measures were taken), although, as expected, the pilot enrichment group reported significantly higher task control ($p < .01$) and boundary control ($p < .001$) than the main enrichment group at time 1. There was no significant increase in autonomy for the de-skilled specialist group. Indeed, examination of the means for this group showed a general decrease in scores.

Having shown that the manufacturing initiative affected levels of employee autonomy in the expected way, we turn now to results for the major hypotheses. Table 6 reports group means and standard deviations for all work orientation variables at each measurement time.

The findings for strategic orientation give partial support for the expectation of an increase in scores on this aspect for all of the groups (Hypothesis 2a). There was a significant increase over time for the main enrichment group ($p < .01$) and for the de-skilled specialist group ($p < .05$). For the pilot

TABLE 6
Means and Simple Effect Tests of Work Orientation, Study 3[a]

	Pilot Enrichment Group			Main Enrichment Group			De-skilled Specialist Group		
Variable	**Time 1**	**Time 2**	**F^b**	**Time 1**	**Time 2**	**F^b**	**Time 1**	**Time 2**	**F^b**
Strategic orientation	3.44 (.37)	3.51 (.37)	<1	3.14 (.47)	3.42 (.59)	8.93**	3.54 (.40)	3.91 (.35)	3.31*
Role orientation: Production ownership	4.32 (.64)	4.19 (.76)	<1	2.67 (.81)	3.41 (.93)	16.83***	3.41 (.48)	3.68 (.78)	<1
Role orientation: Importance of production knowledge	4.03 (.68)	4.13 (.76)	<1	3.27 (.69)	3.70 (.57)	17.97***	3.71 (.74)	3.51 (.44)	<1

[a] Standard deviations are in parentheses. For the pilot enrichment group, $n = 7–8$; for main enrichment, $n = 30–32$; for de-skilled specialist, $n = 7–8$. Ranges are shown as data are missing on some scales.

[b] For all F-tests, $df = 2, 31$ or $2, 32$.

* $p < .05$, one-tailed test

** $p < .01$, one-tailed test

*** $p < .001$, one-tailed test

enrichment group, although they had significantly higher scores on strategic orientation scores than the main enrichment group ($p < .05$) at time 1, as predicted by Hypothesis 2b, there was no further significant increase in strategic orientation scores.

The next set of hypotheses concerns change in role orientation. As expected, there was no increase in role orientation scores for either the pilot enrichment group or the de-skilled specialist group. In contrast, examination of the means for the main enrichment group shows a significant increase for both production ownership ($p < .001$) and the importance of production knowledge ($p < .001$). The pattern of no change for the groups in which there was no change in autonomy and an increase in role orientation scores for the group whose jobs were enriched during the study period is entirely consistent with Hypothesis 3a.

Hypothesis 3b concerns comparison of the time 1 role orientation scores of the pilot enrichment group and the main enrichment group. Once again the data supported our expectations: the pilot enrichment group, which was functioning as an autonomous group at this time, showed significantly higher scores on both production ownership ($p < .001$) and the importance of production knowledge ($p < .01$).

Discussion

The research hypotheses of key interest in this study, those concerning change in role orientation, were supported. For the group whose job autonomy was enhanced with the introduction of product cells, employees reported increased ownership for a range of problems and recognized a wider range of knowledge and skills as important in performing their roles. These results are consistent with management perceptions and with employee comments in interviews. For example, the production supervisor described how the introduction of product cells "created a strong sense of ownership of the products assembled by the team" (Lodhia, 1992: 91). In interviews, operators made comments about goals and problems at time 2 to a much greater degree than at time 1. For example, when asked how the company was performing at a time after the introduction of product cells, one operator stated: "We have to do our best to stay on top—make sure the boards and the stuff we ship out are the right boards and the right quality that the customer wants. So we stay on top, and we don't need to get behind again." Similarly, after the job enrichment, operators made comments such as: "We are working towards a customer order and know exactly where the jobs are going and when they've got to go for" and "My actual goal is customer satisfaction, I'll do anything to make sure the job goes out on the day it's meant to." A broad role orientation was also reflected in another operator's account of her innovative suggestion to management that operators could be involved in explaining production processes to visiting customers.

Inspection of mean scores for the pilot enrichment group shows that the role orientation scores for this group are consistently higher than scores for the main enrichment group, even after job redesign in both groups. More-

over, the high scores are maintained over a long period, suggesting this difference does not simply reflect a temporary Hawthorne effect (such as feeling positive by virtue of being a member of a special group). Instead, the results suggest a greater degree of change in role orientation for the employees in the pilot enrichment group. This increase might be partly a result of membership in a pilot group that received extensive training and support in the early days of implementation, and it is possible that these aspects alone led to the development of employees' broader role orientations. However, perhaps even more critical were the specific tasks carried out by employees within the pilot enrichment group. Making the product involved both assembly and staging aspects of production, which meant not only that the tasks were of much wider scope than those the other groups performed, but also that the group was buffered from others and was therefore able to function more autonomously. In support of the latter explanation, the levels of reported autonomy at time 2 were higher for the pilot enrichment group than for the main enrichment group.

Consistent with the finding that there was no change in job autonomy, there was no significant increase in production ownership or the importance of production knowledge for the pilot enrichment group or for the de-skilled specialist group. Indeed, for the latter, there was a tendency for scores to decrease. This pattern is consistent with comments from some test engineers suggesting a narrowing of perspective. One person commented as follows: "I have a very narrow view of company products," and another stated this: "With product lines [cells] my focus on different types of boards has gone and I only know about how to fix 3 types of boards, whereas I once could have a chance of fixing about a 100 types."

The hypotheses concerning strategic orientation were partly supported. As predicted, scores increased for both groups exposed to product cells over the measurement period, suggesting that general factors that these groups were exposed to, such as supervisory communication and training courses, facilitated better understanding of strategic principles. Consistent with this, at the start of the study the pilot enrichment group members who were already working in product cells had significantly higher strategic orientation scores than employees in the main enrichment group. However, contrary to what was expected, there were no further increases in scores for the pilot group. One explanation concerns the special nature and timing of the changes for this group. As participants in the pilot group, members had undergone extensive training and coaching prior to the sitewide changes and the start of the study. For example, two managers and one engineer worked extensively with the group in its start-up days. Perhaps further sitewide communication after this time did not substantially add to employees' knowledge base and thus did not enhance their understanding and endorsement of core strategic principles.

One issue that we have not yet addressed is statistical power. This is a particular concern for those analyses where no effects were predicted, as the statistical tests may have had insufficient power to find an effect (so there is

an increased likelihood of type II error). This issue applies to study 2 as well as to study 3; thus, we turn now to some additional analyses that involved samples from both studies.

ADDITIONAL ANALYSES

Although reduced power is a particular concern, the differences in means where no effects were predicted are sufficiently small to suggest that more power would not have altered the conclusions. In studies 2 and 3, the change in mean scores for those instances in which there was no significant increase ranged from −.22 to .23. In contrast, for the main enrichment group in study 3, for which there was a significant increase, the mean scores for the importance of production knowledge and production ownership increased by .74 and .43, respectively.

Nevertheless, we felt it was important to conduct some extra analyses to further address the issue of power. We thus combined samples from study 2 and study 3 and formed two groups. Group 1 was the main enrichment group from study 3 ($n = 32$); group 2 contained all the remaining employees from studies 2 and 3 whose jobs were not enriched with greater autonomy over the study period ($n = 51$). We predicted an increase in strategic orientation for both groups and an increase in role orientation for group 1 only. Thus, for group 2 we expected no change in role orientation, and we examined this prediction utilizing a larger sample.

As before, we conducted a repeated-measures analysis of variance for each of the work orientation scales ("partialing out" organizational effects using dummy coding) and assessed simple effects of change over time for each group. By way of a manipulation check, we noted that there was a significant increase in autonomy for group 1 (the main enrichment group) but not for group 2. As we expected, we found a significant increase in role orientation scores for group 1 but not for group 2 and found a significant increase in strategic orientation scores for both groups (see Table 7). Thus, the finding of no change in role orientation scores was obtained with a larger sample size and a more powerful statistical test.

GENERAL DISCUSSION

This article addresses the neglected issue of employee work orientations. In an initial study, we described the development of measures to assess two types of work orientation, strategic and role, and demonstrated that the measures were adequate for the purposes of this study. We then presented two field studies that examined the effects of introducing new manufacturing initiatives on employees' work orientations. In the first, a JIT-TQM strategy was accompanied by efforts to inform employees through communication and training, but there was no attempt to enhance employee autonomy. As expected, strategic orientation increased over time, but role orientation did not broaden. In the next study, where an initiative was introduced in conjunction with a deliberate attempt to enhance autonomy,

TABLE 7
Means and Simple Effect Tests of Work Orientations, Groups 1 and 2[a]

Variable	Group 1[b]			Group 2[c]		
	Time 1	Time 2	F^d	Time 1	Time 2	F^d
Strategic orientation	3.14	3.42	13.80***	3.26	3.53	19.19***
	(.47)	(.59)		(.61)	(.59)	
Role orientation: Production ownership	2.67	3.41	20.56***	3.31	3.45	1.33
	(.81)	(.93)		(.92)	(.94)	
Role orientation: Importance of production knowledge	3.27	3.70	21.04***	3.81	3.65	5.37**
	(.69)	(.57)		(.55)	(.54)	

[a] Standard deviations are shown in parentheses.

[b] The main enrichment group from study 3.

[c] Includes the later change group and early change group from study 2 and the pilot enrichment and de-skilled specialist groups from study 3.

[d] For all *F-tests, df = 1, 80 or 1, 81.*

* $p < .05$, one-tailed test

** $p < .01$, one-tailed test

*** $p < .001$, one-tailed test

those employees who reported greater control also developed more flexible role orientations. Taken together, results from these studies support the proposition that change in strategic and role orientation is facilitated in different ways.

A potential practical implication of this finding is that organizations need to adopt two levels of interventions when introducing new manufacturing practices. To facilitate the development of a more appropriate strategic orientation, initiatives that enhance understanding of modern principles are needed. These can be formal programs (such as training or communication schemes) but can also include efforts to change systems that reinforce traditional manufacturing principles—removing individual productivity bonus schemes that send a strong message to employees that quantity is more important than quality is an example. However, to facilitate a broader role orientation in which employees have a more strategic and proactive outlook, restructuring jobs and authority structures is likely to be necessary. As Aktouf stated, a change in power structure is needed to develop proactive, broad-thinking employees "because such a change must be a lived experience and it can be neither contrived nor commanded" (1992: 419). This recommendation for "empowerment" is one that is frequently espoused but is not often achieved in practice. It seems that organizations either ignore work organization issues when introducing new practices (Storey, 1994) or try to bring about the required attitude change by adopting coercive human resource management strategies (Delbridge et al., 1992).

The association between autonomy and role orientation is also important from a research perspective. Specifically, it is consistent with the premise that work redesign can promote employee learning and development.

One possible mechanism is that autonomy allows hands-on learning in which people have the opportunity to interact with the environment and become more involved in, and more knowledgeable about, the wider production process. This experience might then lead to broader ownership of problems and a more proactive view of performance. Indeed, the resulting movement toward a flexible role orientation can be seen in terms of Argyris's (1957, 1964) developmental criteria. Argyris characterized the "child" as passive, reactive, dependent, and seeking immediate need gratification and the "adult" as proactive, independent, and able to tolerate delayed gratification. An employee who feels ownership for a range of strategic problems can be seen as closer to the adult end of Argyris's spectrum than someone who feels concern for only a limited range of problems with immediate consequences. The following quote from one of the operators whose autonomy was enhanced (study 3) supports this developmental explanation:

> I've matured quite a lot, definitely have, because before . . . you work in this environment with a supervisor telling you what to do and you've got this thing inside you that "OK, they are like parents, I am a kid" and you tend to work like that. . . . With this team-work, people treat you like an adult which is a really good thing. And if they are going on to product cells in the whole factory, and if they treat more and more people like adults, I think, you know, a lot of people will grow up.

The idea that autonomy facilitates learning and development is an important extension of existing job design research, which has traditionally focused on how work redesign impacts affective reaction variables, such as job satisfaction and well-being. It also highlights an alternative mechanism for enhanced performance. Better performance resulting from job redesign is usually explained in terms of motivational processes (i.e., motivated workers work harder and take more care). Or, if explained in nonmotivational terms, the better performance is viewed as a result of more efficient work systems that allow quicker responses to problems. A learning process is an alternative explanation (cf. Frese & Zapf, 1994; Wall, Jackson, & Davids, 1992). As a result of active and autonomous engagement in more tasks, people develop new understandings of their roles and how they should be performed. In Porter and Lawler's (1968) terms, employees develop a more appropriate role perception that then guides the direction in which they expend their effort. Clearly, a critical link in such a proposition is that between work orientation and performance. Such a link has been assumed to date, but not tested. We discuss the need for such tests as part of a broad research agenda suggested by this article.

A key limitation of our studies is the small samples used, which give rise to problems concerning power and generalizability. An extra analysis demonstrated that lack of power was unlikely to explain the absence of change in role orientation. A further argument against power as an explanation for the results is the qualitative data that supported the statistical con-

clusions. The issue of generalizability, however, remains a concern. Our strategy was to find and compare organizational initiatives that were very similar in their JIT-TQM emphasis but offered clear contrasts on the enrichment dimension. Thus, our preference was for focused research designs, which possess strong internal validity relative to the propositions, rather than for larger-scale and less focused designs. Despite our approach, it is clear that further studies are needed, and we hope our article will promote research in this area. Such studies could be extended to nonmanufacturing contexts (for example, TQM and the associated customer ethos is increasingly prevalent within service industries) and to employees in higher-level positions (for example, one could examine supervisors' changes in role orientation as they move from a controlling role to one emphasizing coaching and boundary management).

A further limitation of the studies concerns the measurement of work orientation. The measures developed here were appropriate for the purposes of testing the research propositions, but there is clearly room for further development of the scales, and our results suggest it would be worthwhile to invest effort in doing so. Issues that are likely to emerge concern the degree to which generalized measures that transcend contexts can (or should) be developed, the independence of the measures, and the dimensions within the measures. Studies with larger samples that permit factor analysis are needed to establish the latter aspects. The differential validity of the scales in relation to similar concepts, such as organizational citizenship (Bateman & Organ, 1983) and proactive personality (Bateman & Grant, 1993), should also be investigated. Moreover, although the work orientation measures developed here serve their intended purpose of evaluating broad-based changes, fine-grained changes in orientation will probably require qualitative methodologies.

A further research priority, as described above, is to examine the relationship between performance and work orientation. To date, it has been assumed that employees require a certain type of work orientation in order to perform effectively within modern manufacturing contexts. We also obtained promising results in exploratory tests of the relationship between orientations and supervisory ratings of performance within the case studies described here. However, given the complexity involved in predicting performance, these analyses are not reported here. Studies should be specifically designed to look at this issue, and close attention should be given to how performance is assessed (objectively or subjectively, individually or collectively) and to the dimensions of performance that are measured (multiple aspects might be appropriate, such as role innovation and flexibility). For meaningful tests of an association between work orientation and performance, it will also be important to consider contingencies that might affect the relationship. Barrick and Mount (1991) argued that a link between personality and performance can only be established under "weak" conditions in which behavior is not constrained, such as in jobs with high autonomy. Applying this reasoning here, work orientation might relate to performance

only when employees have sufficient autonomy to behave in a way that is consistent with their orientation.

The type of production environment will be a further contingency to consider. In environments in which the technology is simple and the environment is stable, organizations might be able to achieve sufficient gains from new initiatives without enhancing autonomy or developing employees (Clegg, 1984; Lawler, 1992; Slocum & Sims, 1980). A case in point concerns the organization described in study 2, which, in spite of maintaining a traditional work design, obtained benefits of the JIT-TQM initiative in terms of lead time, work-in-progress, space, and housekeeping. This was a relatively stable environment in which the driving force for change was reducing cost. In contrast, where the production environment is highly uncertain (e.g., where there are frequent changes in product design and turbulent markets), perhaps only an autonomous and flexible workforce with broad role orientations can cope with the changing demands. The company described in study 3 is illustrative. Management required greater flexibility and higher quality and saw both outcomes as dependent on developing a flexible, thinking, and highly committed workforce. As Jones and Scott (1987: 35) suggested, to attain such "intangible and qualitative" benefits, changes to work roles and authority structures are essential.

REFERENCES

Aktouf, O. 1992. Management and theories of organizations in the 1990s: Toward a critical radical humanism? ***Academy of Management Review,*** 17: 407–431.

Alasoini, T. 1993. Transformation of work organization in time-based production management: The case of three Finnish electronics plants. ***International Journal of Human Factors in Manufacturing,*** 3: 319–333.

Argyris, C. 1957. ***Personality and organization.*** New York: HarperCollins.

Argyris, C. 1964. ***Integrating the individual and the organization.*** New York: Wiley.

Baldamus, W. 1961. ***Efficiency and effort: An analysis of industrial administration.*** London: Tavistock.

Barrick, M. R., & Mount, M. K. 1993. Autonomy as a moderator of the relationship between the big five personality dimensions and job performance. ***Journal of Applied Psychology,*** 78: 111–118.

Bartlett, F. C. 1932. ***Remembering: A study in experimental and social psychology.*** Cambridge: Cambridge University Press.

Bateman, T. S., & Grant, J. M. 1993. The proactive component of organizational behavior—A measure and correlates. ***Journal of Organizational Behavior,*** 14: 103–118.

Bateman, T. S., & Organ, D. W. 1983. Job satisfaction and the good soldier: The relationship between affect and employee "citizenship." ***Academy of Management Journal,*** 26: 587–595.

Bratton, J. 1993. Cellular manufacturing: Some human resource implications. ***International Journal of Human Factors in Manufacturing,*** 3: 381–399.

Bruggeman, A., Groskurth, P., & Ulich, E. 1975. ***Arbeitszufriedenheit.*** Bern: Huber.

Buchanan, D. A., & McCalman, J. 1989. ***High performance work systems: The Digital experience.*** Surrey, England. Routledge.

Clegg, C. W. 1984. The derivation of job design. ***Journal of Occupational Behavior,*** 5: 131–146.

Cohen, J. 1960. A coefficient of agreement for nominal scales. ***Educational and Psychological Measurement,*** 20: 37–46.

Cummings, T., & Blumberg, M. 1987. Advanced manufacturing technology and work design. In T. D. Wall, C. W. Clegg, & N. J. Kemp (Eds.), ***The human side of advanced manufacturing technology:*** 37–60. Chichester, England: Wiley.

Davis, L. E., & Wacker, G. J. 1987. Job design. In G. Salvendy (Ed.), ***Handbook of human factors: 431–494. New York: Wiley.***

Dean, J. W., & Snell, S. A. 1991. Integrated manufacturing and job design: Moderating effects of organizational inertia. ***Academy of Management Journal,*** 34: 774–804.

Delbridge, R., Turnbull, P., & Wilkinson, B. 1992. Pushing back the frontiers: Management control and work intensification under JIT/TQM regimes. ***New Technology, Work and Employment,*** 7: 97–105.

Fishbein, M., & Azjen, I. 1975. ***Belief, attitude, intention and behavior: An introduction to theory and research.*** Reading, MA: Addison-Wesley.

Fleiss, J. L. 1971. Measuring nominal scale agreement among many raters. ***Psychological Bulletin,*** 76: 378–382.

Frese, M., 1982. Occupational socialization and psychological development: An underemphasized perspective in industrial psychology. ***Journal of Occupational Psychology,*** 55: 209–224.

Frese, M., & Zapf, D. 1994. Action as the core of work psychology: A German approach. In M. D. Dunnette, L. M. Hough, & H. C. Triandis (Eds.), ***Handbook of industrial and organizational psychology,*** vol. 4 (2nd ed.): 271–340. Palo Alto, CA: Consulting Psychologists Press.

Goldthorpe, J. H., Lockwood, D., Bechofer, F., & Platt, J. 1968. ***The affluent worker: Industrial attitudes and behaviour.*** Cambridge: Cambridge University Press.

Hackman, J. R., & Oldham, G. 1976. Motivation through the design of work: Test of a theory. ***Organizational Behavior and Human Performance,***16: 250–279.

Hayes, R. H., Wheelwright, S. C., & Clark, K. B. 1988. ***Dynamic manufacturing: Creating the learning organization.*** New York: Free Press.

Hill, C. E. 1991. Almost everything you ever wanted to know about how to do process research on counseling and psychotherapy that you didn't know who to ask. In C. E. Watkins & L. J. Schneider (Eds.), ***Research in counseling:*** 85–118. Hillsdale, NJ: Erlbaum.

Ilgen, D. R., & Hollenbeck, J. R. 1991. The structure of work: Job design and roles. In M. D. Dunnette & L. M. Hough (Eds.), ***Handbook of industrial and organizational psychology*** (2nd ed.): 165–207. Palo Alto, CA: Consulting Psychologists Press.

Jackson, P. R. 1983. An easy to use BASIC program for agreement amongst many raters. ***British Journal of Clinical Psychology,*** 22: 145–146.

Jackson, P. R., Wall, T. D., Martin, R., & Davids, K. 1993. New measures of job control, cognitive demand, and production responsibility. ***Journal of Applied Psychology,*** 78: 753–762.

Jones, B., & Scott, P. 1987. Flexible manufacturing systems in Britain and the USA. ***New Technology, Work and Employment,*** 2: 27–37.

Karasek, R., & Theorell, T. 1990. ***Healthy work: Stress, productivity, and the reconstruction of working life.*** New York: Basic Books.

Kelly, G. A. 1955. ***The psychology of personal constructs.*** New York: Norton.

Lawler, E. E. 1992. ***The ultimate advantage: Creating the high involvement organization.*** San Francisco: Jossey-Bass.

Lawler, E. E. 1994. From job-based to competency-based organizations. ***Journal of Organizational Behavior,*** 15: 13–15.

Lodhia, C. K. 1993. ***Manufacturing strategy of just-in-time and the human factors.*** Unpublished master's dissertation, University of Derby, England.

Monden, Y. 1983. ***Toyota production system.*** Norcross, GA: Industrial Engineering and Management Press.

Oliver, N., & Davies, A. 1990. Adopting Japanese-style manufacturing methods: A tale of two (UK) factories. ***Journal of Management Studies,*** 27: 555–570.

Parker, S. K., Mullarkey, S., & Jackson, P. R. 1994. Dimensions of performance effectiveness in high-involvement work organizations. ***Human Resource Management Journal,*** 4: 1–21.

Porter, L. W., & Lawler, E. E. 1968. ***Managerial attitudes and performance.*** Homewood, IL: Irwin.

Schonberger, R. J. 1986. ***World class manufacturing: The lessons of simplicity applied.*** New York: Free Press.

Slocum, J., & Sims, H. 1980. A typology of technology and job design. ***Human Relations,*** 33: 193–212.

Sproull, L. S. 1981. Beliefs in organizations. In P. C. Nystrom & W. H. Starbuck (Eds.), ***Handbook of organizational design,*** vol. 2: 203–224. New York: Oxford University Press.

Storey, J. 1994. ***New wave manufacturing strategies: Organizational and human resource management dimensions.*** London: Chapman.

Susman, G., & Chase, R. 1986. A sociotechnical systems analysis of the integrated factory. ***Journal of Applied Behavioral Science,*** 22: 257–270.

Tailby, S., & Turnbull, P. 1987. Learning to manage just-in-time. ***Personnel Management,*** January: 16–19.

Taira, K. 1996. Compatibility of human resource management, industrial relations, and engineering under mass production and lean production: An exploration. ***Applied Psychology: An International Review,*** 45: 97–117.

Turnbull, P. J. 1986. The "Japanisation" of production and industrial relations at Lucas Electrical. ***Industrial Relations Journal,*** 17: 193–206.

Wall, T. D., Jackson, P. R., & Davids, K. 1992. Operator work design and robotics system performance: A serendipitous field study. ***Journal of Applied Psychology,*** 77: 353–362.

Womack, J. P., Jones, D. T., & Roos, D. 1990. ***The machine that changed the world.*** New York: Rawson Associates.

Wood, S. 1990. Tacit skills, the Japanese model and new technology. ***Applied Psychology: An International Review,*** 39: 169–190.

Zammuto, R. F., & O'Connor, E. J. 1992. Gaining advanced manufacturing technologies' benefits: The roles of organization design and culture. ***Academy of Management Review,*** 17: 701–728.

APPENDIX

The following items and stems, given verbatim, composed the scales used in study 1.

Strategic Orientation

This is a list of statements made by people about work in general. We would like to know *your* opinion on these issues. Please rate whether you agree or disagree.

1. In the long run, production is more efficient if people stick to what they already know,

rather than learning new things.
2. Efficient workers get on with what they've been told rather than questioning things.
3. Fixing problems as they arise is more efficient than trying to prevent them.
4. When an organization is running smoothly, there's no need to think about changing things.
5. It is important to keep making products, even if they go into stock rather than directly to customers.
6. In a production department, time spent not producing is time wasted.
7. The most important goal of a production department is to keep producing no matter what.
8. When I see lots of work on the shopfloor waiting to be finished, I feel confident of this company's future.
9. If I know what to do and how to do it, I am not concerned about why.
10. It is not my job to make important decisions about my work.

The response scale was 1, strongly disagree; 2, disagree; 3, not sure; 4, agree; 5, strongly agree. All items were reverse-coded.

Role Orientation: Production Ownership[a]

To what extent would the following problems be of personal concern to you (note that some of these problems may be someone else's concern, such as your supervisor's, or they may not be a problem):

1. Orders for the products you deal with were repeatedly not being met on time.
2. Customers for the products you deal with were dissatisfied with what they receive.
3. The quality of the products made in your work area was not as good as it could be.
4. There was much unfinished work sitting in your area.
5. There was a pile of completed work in your area.
6. The way some things were done in your work area meant a lot of re-work was needed.
7. Others in your work area were not pulling their weight.
8. People in your work area were not coordinating their efforts.
9. There was a lack of well-trained people in your work area.

The response scale ranged from 1, to no extent, of no concern to me, to 5, to a very large extent, most certainly of concern to me.

Role Orientation: The Importance of Production Knowledge[b]

How important are the following skills and knowledge for you to do your job effectively?

1. Knowing the root causes of production problems that occur.
2. Being able to measure and analyse problems in the production process.
3. Being able to anticipate and prevent production problems.
4. Being able to make decisions as part of a group.
5. Being able to involve and motivate people.
6. Being able to understand other people's points of view.
7. Understanding how work flows in your work area.
8. Knowing what skills everyone in your work area has.
9. Knowing the priorities of work in your area.
10. Knowing the requirements of your end customer.
11. Knowing the overall objectives of the company.
12. Knowing what is different about the products made in this company compared to those made by competitors.

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[a] Items tapping problems concerning the categories goal achievement, operational inefficiencies, and group cohesion and coordination are items 1–3, 4–6, and 7–9, respectively.

[b] Items tapping cognitive activities, team working, knowing local production requirements, understanding of wider manufacturing, and self-direction are 1–3, 4–6, 7–9, 10–12, and 13–15, respectively.

13. Being willing to challenge and question the way things are done.
14. Being willing to take on and accept new responsibilities.
15. Being able to work out what to do when instructions are vague.

The response scale ranged from 1, not at all important, to 5, extremely important.

Study Variations

Study 2. Role orientation—production ownership: As above, except item 6 was "In your assembly area, products were being handled unnecessarily." Role orientation—the importance of production knowledge: As above, except item 12 was "Being able to get on with a job without raising objections, even if the way it's done is not the best" (reverse-coded).

Study 3. Strategic orientation: Items 6, 7, and 8 were replaced by "I could do my job perfectly well without knowing the company's overall objectives," "I find it reassuring if there is always a large pile of work waiting for me to work on," and "I can't be expected to be concerned about mistakes other people make." Role orientation—production ownership: As above, except item 3 was "In your assembly area, products were being handled unnecessarily." Item 8 was replaced by two different group-cohesion items appropriate to the context. "There are strained relations among some members of your work group" and "Too many people in your area want to go on holidays at the same time." Role orientation—the importance of production knowledge: Item 4 was "Knowing how to assess the performance of the work group." Instead of items 10–12, the following items assessed self-direction: "Knowing how to allocate tasks without the supervisor," "Knowing how to put over an idea," and "Knowing how to go about resolving problems." Finally, replacing item 15 was "Understanding the costing in your work area."

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RESEARCH NOTES

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DOES NATIONAL CULTURE OR AMBIENT TEMPERATURE EXPLAIN CROSS-NATIONAL DIFFERENCES IN ROLE STRESS? NO SWEAT!

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Van de Vliert and Van Yperen's (1996) proposal that ambient temperature explains the relationship between national cultural values and typical levels of role stress is reevaluated. The provisional conclusion is that the effect of ambient temperature on role stress is largely mediated by its contribution to the historical evolution of cultural values.

Van de Vliert and Van Yperen (1996) have provided two stimulating explanations for findings linking national culture and role stresses that we and our colleagues reported in an earlier *Academy of Management Journal* research note (Peterson, Smith, et al., 1995). Their first and principal explanation is that our findings were the result of a confound that is conceptually very distinct from national culture—ambient temperature. The basic argument is that exposure to heat provides a much better explanation for the typical sense of role stress in a country than does anything about the values most typical in the country. Their secondary explanation is that our findings can be more completely understood by positioning them within a model that includes cultural variables that may be prior to or different from those derived from Hofstede's (1980) pioneering study of culture, on which we focused in our article.

Data collection was conducted by Adebowale Akande (Nigeria), Sabino Ayestaran (Spain), Stephen Bochner (Australia), Victor Callan (Australia), Valeria Cavalcante (Italy), Nam Guk Cho (Korea), Jorge Correia Jesuino (Portugal and Macao), Maria D'Amorim (Brazil), Pierre-Henri Francois (France), Edmundo Gamas (Mexico), Beata Groblewska (Poland), Karsten Hofmann (Germany), Aristotle Kantas (Greece), Paul L. Koopman (Netherlands), Pavla Kruzela (Czech Republic), Kwok Leung (Hong Kong), Tock Keng Lim (Singapore), Shahrenaz Mortazavi (Iran), John Munene (Uganda), Dana Pop (Romania), Mark Radford (Japan), Czegledi Reka (Hungary), Arja Ropo (Finland), Grant Savage (U.S.), Bernadette Setiadi (Indonesia), T.N. Sinha (India), Ritch Sorenson (U.S.), Yumiko Taylor (Philippines), Sevda Tsvetanova (Bulgaria), Conrad Viedge (South Africa), Zhong Ming Wang (China), and Rob Ward (Zimbabwe). Data analysis assistance was provided by Shaun Dugan.

Van de Vliert and Van Yperen's (1996) position is quite consequential. Their analyses focus on the relationship between measures of power distance and role overload. However, their arguments have implications that extend not only to the entire domain of international value, attitude, and perception comparisons, but to all of organization studies. A well-verified model suggesting that temperature substantially determines work attitudes certainly has the potential to improve management throughout the world, at least to the extent that workplace temperature can be controlled by appropriate heating and cooling.

In our response, we wish to accomplish three purposes. The first is to provide some background to our original paper and place it in the context of controversies about country differences and how well Hofstede's (1980) country culture scores represent these differences. The second is to describe the model that is guiding our ongoing research. The third, in conclusion, is to consider Van de Vliert and Van Yperen's (1996) specific argument that ambient temperature is of greater importance than national culture in predicting work attitudes and that it is a central, neglected element in all of organization studies.

CONTROVERSIES ABOUT COUNTRY DIFFERENCES

Our view of hypotheses like the ones tested in our original paper is that they are not simply the intuitions or opinions of the particular set of scholars who test them. Instead, they are testable propositions induced from prior observations or deduced from a literature. Hypotheses are principally linked to a line of study, and only secondarily to scholars interested in assessing that line of study. We would not go so far as to say that testing hypotheses is entirely value free, only that the values reflected in the research process do not require researchers to find support or nonsupport for the hypotheses they test.

Our own value position on research comparing values, sensemaking, and work processes in different countries is linked to what Adler (1991) identified as managers' need for a "first best guess." In the absence of substantive personal experience in a new location, both individual managers and the planners of a multinational corporation (MNC) need some basis for guessing what they are likely to encounter there. We agree with Boyacigiller and Adler's (1991) argument that in the absence of any information, managers are not likely to default to the kind of careful, emic analysis of local conditions that one might want to advocate. Instead, lack of prior information is likely to result in a parochial or ethnocentric response. Our own values suggest that we should try to contribute what we can to remedying this situation, and in so doing both assess and provide alternatives to major lines of research likely to give managers information about various societies.

Where, then, do we turn for a starting point? There is a long tradition of anthropological studies describing particular societies throughout the world (notably the Human Resource Area File [Murdoch, 1981]), but these tend to

focus on observables (like architectural styles) and noneconomic, nonwork matters in isolated, premodern societies (Burton & White, 1987). Hence, for most multinationals, such studies tend not to be particularly helpful. Recent comparative studies conducted principally by psychologists and management consultants have been filling the information gap. For these, Hofstede's (1980) work has been the most common starting point, but it has been in serious need of empirical evaluation. Evaluation requires multiple-country data sets, and we are developing just such a data set.

We were close observers of and collaborators with a number of scholars, including the Meaning of Working (MOW) International Research Group (1987) and a group called the Chinese Culture Connection (1987), who were evaluating and considering alternatives to Hofstede's (1980) work. Like many of these colleagues, we had concerns about various aspects of Hofstede's conclusions. Schwartz (1990, 1994) summarized these concerns by noting six limitations that affect whether Hofstede's results provide a good basis for either subsequent research or managerial application. He raised questions about (1) the exhaustiveness of Hofstede's value dimensions, (2) the adequacy of the sample of nations (Hofstede's project did not include countries then under state socialism), (3) the effect of sample type (Hofstede's sample of an MNC's employees), (4) historical changes since the time of Hofstede's study, (5) the grounding of culture-level variables in meaningful individual-level dimensions of values, and (6) the equivalence in meaning of value items across cultures. Yeh and Lawrence (1995) raised similar questions in evaluating research linking Hofstede's measures to indicators of economic growth.

Expecting initially that Hofstede's work would not provide a good basis for further research, we began in the early 1980s to develop a program of research built on an entirely different line of theory. In discussions with colleagues in quite different parts of the world, especially the United States, the United Kingdom, Japan, Hong Kong, and the People's Republic of China, we reconsidered the kinds of events that managers in most of the world are likely to encounter in their work and the sources that they are likely to draw on to make sense of these events. We sought, in effect, to develop a deliberately "global product" in our concepts and measures. Conceptual and empirical papers have been published that report the pilot studies we conducted during the mid-1980s (Peterson, Smith, Bond, & Misumi, 1990; Smith & Peterson, 1988; Smith, Peterson, & Wang, 1995). More recently, we are finding our research to be converging with sensemaking and institutional theory studies (Peterson, 1997; Peterson, Elliott, Bliese, & Radford, 1996). Although the core of our work is based on new measures, we have included a few traditionally used measures to provide an empirical bridge between our research and established organization behavior studies. The role stress measures reported in our 1995 *Academy of Management Journal* note were among these established organization behavior measures.

Having finished several pilot studies, we finalized measures for our

large-scale study in 1990 and began global data collection. Several things had begun to occur in other lines of research as we were developing our ideas and conducting larger-scale data collection. Among these developments were several studies suggesting that Hofstede's results were more meaningful and more stable than we had expected (e.g., Franke, Hofstede, & Bond, 1991; Hofstede & Bond, 1988; Hoppe, 1990). For example, the critiques that Yeh and Lawrence (1995) provided of the link between Hofstede's measures and economic criteria and the one that Van de Vliert and Van Yperen (1996) provided of our research have one thing in common—both are built on empirical support for the premise that Hofstede's measures reflect something important about national characteristics. This is a remarkable conclusion, given critiques like Schwartz's (1990, 1994).

As the number of countries in our national sample grew, we thought it worthwhile to reconsider what implications Hofstede's dimensions would be expected to have for some of our measures if these dimensions were in fact meaningful and stable at the national level. The hypotheses and results of our 1995 *AMJ* paper addressed that idea.

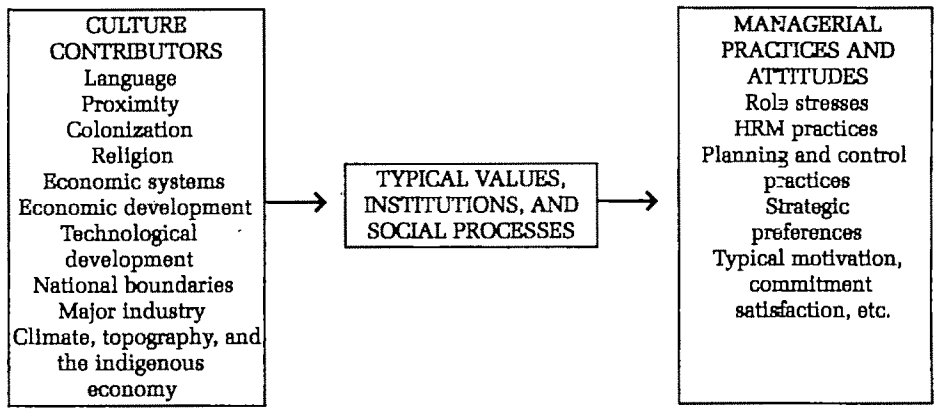
Among our basic conclusions were the following: (1) There is something to be gained by comparing aggregated individual data from various parts of the world, at least if care is taken to scale the measures using both a country-level and an individual-level data structure. (2) "Country" is a reasonable, if not the only possible, delimitation of "various parts of the world." (3) Hofstede's country-level data continue to have some valid meaning. (4) Since there are relatively few countries in the world (approximately 200), and country-level value and attitude data are unusually time-consuming and costly to collect, there are likely to be continuing sample-size problems limiting the stability of results and affecting the opportunity to use multivariate analysis to clearly sort out predictive relationships.

A MODEL OF CULTURE CONTRIBUTORS, CHARACTERISTICS, AND CONSEQUENCES

Van de Vliert and Van Yperen (1996) reasonably argued that relationships between variables need to be given a larger conceptual framing. The larger project of which the role stress data are a part deals broadly with role relationships, sensemaking, work attitudes, and effectiveness. Figure 1 presents our working model for national culture as it affects matters of managerial significance. The space allotted for this response precludes developing a complete predictive model, but we can at least frame some of the principal controversies by reference to Figure 1.

The focus of organizational research into culture has been on variables referred to in the middle column—dimensions of values, ways of representing social processes, and the like. Research into what contributes to differences among subgroups of people has been more limited, although some relevant theory has been developed (e.g., Hofstede, 1980: 120 ff.). Research

FIGURE 1
A Model of Culture Determinants, National Characteristics, and Work Attitudes and Processes



linking culture characteristics to typical ways of thinking, feeling, or behaving in more than two or three societies has also been quite rare (Peng, Peterson, & Shyi, 1990). Hence, our 1995 *AMJ* paper and the Van de Vliert and Van Yperen (1996) response are relatively unusual.

Country as a Culture Delimiter

A key assumption in our research is that "country" is a useful culture delimiter (Scott, 1995: 93–94; Smith & Bond, 1993). When people use the label "culture" with reference to a society, they are usually referring to the intuition that the world is neither a homogenous entity nor a collection of unique individuals randomly dispersed throughout. People form distinguishable (but not entirely), bounded (but not rigidly) communities. The link between nation and culture tends to occur because people prefer to interact with other people and be guided and politically governed by institutions consistent with values and beliefs with which they identify. Political and often violent conflict tends to occur when people and institutions are coerced by more powerful outside parties to interact with quite different societies more intensely than they find tolerable, or to be governed by institutions highly inconsistent with their values.

This is not to say that the political construct "country" is equivalent to culture, however. The disconnection between country and culture occurs for a variety of reasons. Examples include national boundaries set by powerful third parties (in, for instance, the former Yugoslavia and much of Africa), cultural change within a political entity (e.g., the United States before the Civil War), and a basic cultural identity that supports tolerance of two or more relatively distinct subcultures (e.g., modern Canada and Switzerland).

Rather than wholly discrediting the significance of country, however, these conflicts serve to illustrate the intensity with which cultural groups prefer to be governed in a manner compatible with their own values and beliefs and provide a modern reminder of the way in which nation states have emerged.

Reasons for National Cultural Differences

Although country is one culture delimiter, the model shown in Figure 1 does not depict it as the only one. As the variables noted at the left of Figure 1 indicate, we believe that distinguishable communities of people form for two basic kinds of reasons. One kind of reason includes variables, like ambient temperature, that have a functional, causative quality. Physical features, for example, produce norms that at one time contributed to the well-being of a community. For example, hand-shaking symbolizes the absence of threat in a society that engages in a certain kind of hand-to-hand combat. This is the sort of functional argument that Van de Vliert and Van Yperen (1996) proposed as the second way in which ambient temperature may link to national culture. This argument is that ambient temperature is one of the factors affecting cultural evolution. As noted in Figure 1, we view such physical characteristics as only one in a set of contextual features affecting culture.

A second set of reasons for cultural differences are variables that simply produce separation. Our premise is that for functionally random reasons, separated groups make different choices that accrue to bring about cultural drift. For example, although some aspects of language structure may provide a society with adaptive advantages, we expect that many are simply the result of functionally random choices institutionalized over time by accepted practice. It is important for a society to have a working agreement about what symbols correspond to what meanings, but the choice of one symbol over another is often arbitrary.

Contributors to Cultural Differences

We are currently using ten categories of culture predictors to organize our thinking. Although none is ephemeral enough to be unimportant, none is entirely stable. Each is also expected to affect the others. Although some may also prove to be "confounds," in Van de Vliert and Van Yperen's (1996) sense of factors that affect work experiences apart from culture, we have chosen them as culture predictors. Of the predictors listed below, the first four and the last are the more likely to have affected "traditional" culture, and the others are more closely linked to technological, economic, and scientific modernization. Extensive literatures are available about the effects of each.

Language separates cultural groups by influencing the ease of communicating relationships between symbols and meanings.

Proximity and topography affect culture exchange by influencing the frequency of interaction between groups. Topographical barriers like mountains and oceans limit the potential for interaction due to close proximity. Distance has been overcome by transportation and communication developments like roads, air transportation, radio, and high-tech communication.

Colonization has promoted culture spread by increased interaction between distant cultures. Colonization patterns have set up complex dynamics. One element is the transfer of some cultural elements from the colonizer to the colony, but the transfer process is not simple. Colonization can produce subgroups showing acceptance and rejection of the colonizer, and cultural hybrids.

Religion has separated cultural groups by influencing the ease or difficulty in synergistic, value-based interaction. However, such ease or difficulty also goes back to earlier ethnic heritage differences (e.g., Celtic vs. other) and to relatively recent economic/class differences (e.g., Protestants in Northern Ireland were transplanted from Scotland).

Economic systems bound culture by influencing the ease of exchange between parties who work within the frameworks of different kinds of economic systems.

Economic development both affects exchanges and hence intercultural contact, and also directly influences values. Acceptance of separation between powerful and less powerful parties is empirically associated with a low level of economic development (Franke et al., 1991; Hofstede, 1980: Ch. 3).

Technological development, closely linked to economic development, has an additional effect. Economic exchanges between technolcgically similar countries tend to be different from those between technologically dissimilar countries (Lindner, 1981).

Political boundaries, or national borders, typically mark areas within which there is more interaction than there is across borders. However, when boundaries are drawn for political and military reasons that disregard other culture delimiters, tension between different subcultures within the boundaries and alliances across boundaries have historically resulted.

Prevailing industry types produce practices that come to be institutionalized on the basis of historical period of industry emergence and subsequent institutional learning (Scott, 1995: 102–112).

Climate, topography, and the indigenous economy affect traditions linked to the behaviors and practices that are functional in primitive agrarian versus hunter-gatherer societies.

The Relationship of Ambient Temperature to Culture Contributors

The first three of these predictors—language, proximity and topography, and colonization—are particularly relevant to degree of separation and interaction, although language also has been argued to affect how thought is

structured. The fourth, religion, provides a substantive content to values as well as influencing the degree of interaction (i.e., more occurs within a religious community, even if across national boundaries).

Predictors five through nine—economic systems, economic development, technological development, political boundaries, and prevailing industry types—are specific aspects of modernization. These are linked to ambient temperature and, consequently, directly relevant to Van de Vliert and Van Yperen's (1996) arguments. For a variety of reasons too complex to explore here, the industrial revolution occurred in the more temperate parts of the world. More recently, economic development has been much more rapid in some of the hotter regions. Hofstede and Bond (1988) noted that nation scores for a measure they called Confucian Work Dynamism were stronger predictors than individualism or change in gross national product (GNP) (but Yeh and Lawrence [1996] took issue with this conclusion). A consequence of these historical facts is that a wide variety of country-level indices can be shown to correlate positively with ambient temperature and with any other index that differentiates the nations of Europe and North America from those whose economies have been developing most rapidly in recent decades.

This link between economics and climate affects one aspect of the population of countries that we are compelled to study in multiple-country research. North America contains only two fully industrialized nations, while Europe has many more. The preponderance of European nations in many multiple-nation studies much accentuates the effect of modernization differences. Our 21-nation study (Peterson, Smith, et al., 1995) contained seven European samples, five samples from the more buoyant Asian economies, and several other samples from diverse geographic locations. If one wished to advance alternative explanations for our findings, it would therefore be possible to argue that role overload is a concomitant of a frenzy of building and new production, whereas role ambiguity is more characteristic among individuals in slowly expanding, increasingly less dominant, developed economies seeking new roles in the world. There is room for debate about how such a formulation fits with predictions based on Hofstede's dimensions.

The last category of variables, at the left of Figure 1, is closest to Van de Vliert and Van Yperen's (1996) interest. In eco-cultural theory (Berry, 1976), the emergence of differing social structures within agricultural and hunter-gatherer societies is postulated. This theory has gained some empirical support from tests in nonindustrialized societies. Georgas and Berry (1995) clustered contemporary nations on the basis of a variety of climatic and social indicators. The three climatic indicators found best able to differentiate their clusters within a sample of 121 nations were highest monthly temperature, lowest monthly temperature, and highest monthly precipitation. We would expect that indicators such as these could provide a basis for predictions as to the types of agriculture that might emerge in different locations, leading to expectations about the nature of social relationships and the degree of role

interdependence that might become traditional. However, we find Van de Vliert and Van Yperen's (1996) reliance upon the single indicator of high ambient temperature, following their principal emphasis on individual physiological psychology, to be less adequate. Locations that are hot and arid require interdependence to ensure individuals' survival as much as locations that are sometimes cold. A more reliable proposition might be that as various types of agriculture have supplanted hunter-gatherer economies, so has the need for interdependence been strengthened, leading ultimately to the complexities of contemporary organizational life. However, in order to arrive by this path at predictions relevant to our findings concerning role overload and role ambiguity, one has to traverse several mountain ranges of historical speculation. It may be preferable to explore more modest forms of theorizing.

Culture characteristics. The middle column of Figure 1 notes various schemes for distinguishing characteristics of culture. Large-scale multiple-country projects have developed such constructs as the following: individualism/collectivism, uncertainty avoidance, power distance, and masculinity/femininity (Hofstede, 1980, 1983); harmony vs. mastery, social concern vs. hierarchy, collectivism vs. intellectual and affective individualism (Schwartz, 1994); equality and embeddedness (Smith, Dugan, & Trompenaars, 1996); eight sources of meaning (Smith & Peterson, 1995); work centrality, work goals, and obligation vs. entitlement norms (MOW International Research Group, 1987); and Confucian dynamism (Chinese Culture Connection, 1987). We have reviewed elsewhere the principal approaches to cultural value comparison that have been researched in recent years (Peterson & Bliese, 1995; Peterson et al., 1996; Smith & Schwartz, 1996). Alternative variables within these schemes are variously intercorrelated. Any one that is treated as a principal predictor of typical national attitudes is likely to be confounded by several others. It is especially here that we are most uncertain about which among various alternatives is the best predictor of work stresses or other topics of concern to organization studies. Understanding the link of culture to topics of managerial concern, though, takes us back to our original purpose in this research—providing managers with a first best guess about what to anticipate in unfamiliar cultural settings.

Managerial practices and attitudes. The process of moving from the kinds of values focused on in large-scale international comparative studies to the kinds of work-related attitudes and variables of most concern to managers continues to be highly speculative (Peterson & Bliese, 1995; Smith & Peterson, 1995). As just one example, the problem of managing differences in strategic priorities among managers coming from countries that vary in uncertainty avoidance is increasingly of concern in multinational management (Maznevski & Peterson, 1997). Studies empirically linking the national value comparison projects like Hofstede's to such processes strike us as being particularly important; hence, our present ongoing research.

The Specific Case of Ambient Temperature, Power Distance, and Role Stress

We have now noted that testing various segments of the model illustrated in Figure 1 is both important and open to various limitations. Van de Vliert and Van Yperen (1996) have provided an excellent illustration of the difficulties that managers are likely to face when managing new foreign direct investments and that scholars are likely to face in drawing firm conclusions about what work-related values, attitudes, and social processes are most typical of various countries and regions. These difficulties are likely to be a continuing challenge to research-based comparisons of countries or other potential culture delimiters. Van de Vliert and Van Yperen also made a useful start in enumerating other types of variables and databases upon which managers and scholars can draw to identify the various factors that may contribute to the managerial problems most typical in various parts of the world.

VAN DE VLIERT AND VAN YPEREN'S ANALYSIS

Having now more fully framed our original study, it is possible to consider the particular alternative explanations that Van de Vliert and Van Yperen (1996) proposed. In essence, they argued that since their ambient temperature measure can account for a greater proportion of variance in reported role overload than can Hofstede's power distance measure, scholars would do well to develop models placing priority on how temperature affects many aspects of organizational behavior. They also considered a substantial number of data sets that could also provide alternative explanations for relationships found in country-level research. To evaluate the meaning of their results, we should consider their research design, the measure they used, and the designs of the studies from which they drew their data.

Basic Research Design Choices

First, some basic aspects of their analysis raise questions in our minds. They chose to analyze only one portion of the results from our 1995 research note—the relationship between power distance and role overload—while omitting other relationships with individualism/collectivism and role ambiguity. They indicated that power distance and individualism share a substantial proportion of their variance. However, does the effect of ambient temperature turn out to be stronger for power distance than for individualism? And what about role ambiguity and role conflict? Their argument focuses on the effect that heat has on affect. Is this argument not as applicable to some attitude criteria as it is to others? Do people who are hot not also lose the ability to focus their attention, thus creating role ambiguity? Would not heat attenuate their ability to handle conflicting demands from multiple parties, thus creating role conflict?

The decision to omit Uganda (Van de Vliert & Van Yperen, 1996: 989) for analyses comparing power distance with ambient temperature explanations

may be of consequence. Contradicting an ambient temperature explanation, role overload in our Ugandan sample is comparatively low, while ambient temperature is comparatively high. Hofstede (1983; confirmed in personal communication, August 1996) indicated that his original East Africa sample spanned a broader area than just Zambia, contrary to what Van de Vliert and Van Yperen indicated. In analyses based upon relatively small samples, the selection of variables to study and adjustments to samples can capitalize on chance (cf. Yeh & Lawrence, 1995). This is a risk in both our original project and in Van de Vliert and Van Yperen's (1996) analysis.

New Analyses and an Update of the Peterson, Smith, and Colleagues (1995) Database

The project reported in our earlier research note is an ongoing one. Data have been added from 11 countries for which temperature data are also available. These are Bulgaria, the People's Republic of China, the Czech Republic, Greece, Hungary, Italy, Macao, the Philippines, Poland, Romania, and Zimbabwe. Hofstede (1983) reported power distance scores for several of these countries. The samples have also been augmented for Brazil, Mexico, and Uganda.

Table 1 presents updated results based on methods described in our original note, adding data about ambient temperature using the data source and procedure described by Van de Vliert and Van Yperen (1996). We have also replaced data for temperature in the capital city with temperature data from the city where data collection was actually done in instances in which a country was climatically diverse and data collection was done at a distance from the capital. (Details of the updated country scores are available from the authors.)

TABLE 1
Cross-National Correlations of Power Distance, Ambient Temperature, and Role Stress

Predictor	Criterion	Number of Countries	Zero-Order Correlation	Partial *r* with Predictor, Controlling for Temperature	Partial *r* with Temperature, Controlling for Predictor
Power distance	Role overload	26	.64***	.49**	
Ambient temperature	Role overload	32	.51**		.18
Power distance	Role ambiguity	26	−.42*	−.47*	
Ambient temperature	Role ambiguity	32	−.08		.25

* $p < .05$
** $p < .01$
*** $p < .001$

The new analysis indicates that power distance has a slightly higher zero-order correlation with role overload than does ambient temperature. Contrary to what Van de Vliert and Van Yperen (1996) found for the original sample of countries, the correlation between ambient temperature and role overload drops to a nonsignificant level when power distance is controlled, while the correlation between power distance and role overload remains significant when ambient temperature is controlled. (If one accepts the argument that Uganda should be excluded, the correlation of role overload with power distance is .65 [$p < .001$] and goes down to .44 [$p < .05$] when ambient temperature is controlled; the correlation of role overload with ambient temperature is then .54 [$p < .01$], dropping to .38 [$p > .05$] when power distance is controlled.)

The bottom two rows of Table 1 make it clear how narrowly even the original Van de Vliert and Van Yperen results apply to just one role stress, and not to subjective well-being in general, as their discussion suggests (e.g., Van de Vliert & Van Yperen, 1996: 997). The correlation of ambient temperature with role ambiguity is nonsignificant both with and without controls for power distance (the same is true if Uganda is omitted from the data set). The originally reported finding of a negative relationship between power distance and role ambiguity remains significant, even with the expanded data set.

Cross-Cultural Aspects of the Research Design

Several issues of comparative research design are raised both in our original paper and in Van de Vliert and Van Yperen's (1996) response. Cross-cultural researchers have been particularly concerned about controlling for variations in acquiescence response bias and other systematic country- and language-linked response tendencies. Evidence exists that the problem is often substantial (e.g., Watkins & Cheung, 1995), and the better-known studies in the field (e.g., Hofstede, 1980; Schwartz, 1994) have used various forms of within-subject standardization to control for such variations. We have used similar methods in other studies (e.g., Peterson et al., 1996) and computed both within-person standardized results and unstandardized results when preparing our 1995 study. As we found that the results for these particular role stress measures were similar with and without standardization, the published version reported the simpler, unstandardized data. In the case of these measures, the inclusion of reverse-scored items in the scales may well have reduced the effects of response biases. In contrast, 26 of the sets of correlations calculated by Van de Vliert and Van Yperen—those derived from International Survey Research studies (Diener et al., 1995; International Survey Research, 1995; Lynn, 1991; Lynn & Martin, 1995)—include no checks for response bias or associated corrections. It is likely that Van de Vliert and Van Yperen's (1996) general contention that national culture and attitude measures are weaker predictors than demographic and geographic-climatic factors may be due in part to the lack of response bias controls in the data sets from which they drew.

All the data sets from which Van de Vliert and Van Yperen (1996) drew represent national cultures as units. Our project does so as well, but we have striven to control for or to be clear about cases in which we have particular reason to believe that our results are limited to subpopulations. For example, our data were first adjusted pan-culturally for industry, department type, and various demographic characteristics. We also documented instances in which we expected that our results would reflect one part of a clearly heterogenous population. For example, we noted that our Spanish data were from the Basque region.

Studies like the Van de Vliert and Van Yperen (1996) project need to cope with climatic heterogeneity within countries. Washington, DC, is not a particularly appropriate base for ambient temperature data, given that we note our United States data to be principally from the southwestern part of that country. Similarly, over half of our Australian data come from the balmly realm of Brisbane, and our Japanese data are all from the far north of Japan rather than from Tokyo. We have made the associated corrections for the results shown in Table 1.

Also, the conceptual substance of Van de Vliert and Van Yperen's (1996) argument is based on the ambient temperature people experience at the time their attitudes or other responses are being recorded. A measure based on *mean* ambient temperature fails to represent the fact that hot countries do not experience the marked diurnal and seasonal variations in temperature that are very important to the experience of living in temperate zones. Following the Van de Vliert and Van Yperen (1996) argument, we would expect that those of our respondents from temperate areas who participated during the summer would have reported more role overload than those who responded during the winter. To our knowledge, no studies of role stress have ever tried to control for the temperature effects associated with the season in which data collection was done. Such issues have not appeared in even the most careful meta-analyses and critical reviews of this area (Jackson & Schuler, 1985). Our own data collection records do not permit a post hoc check of season or time of day of data collection for the country samples in our own research.

The line of response to limitations like these that Van de Vliert and Van Yperen (1996) take in their discussion section is that had the measures been better, the results would have been stronger. Our reaction is different. The strong relationship between climate and role stress they report, combined with the design of their study, suggests that their primary argument, based on the physiological psychology of respondents, is less convincing than is their secondary alternative. This argument, consistent with Figure 1 and long affirmed by anthropologists, as we have noted above, is that climate is one of the factors affecting the pattern of the social relationships that historically emerge within societies.

CONCLUSION

We find value in many of Van de Vliert and Van Yperen's (1996) arguments. The effects of ambient temperature on human well-being are doubt-

less very real, as Van de Vliert and Van Yperen (1996) documented in their introduction. An unethically exploitative work site where hours are excessive and pay is inadequate is, after all, called a sweat shop, highlighting excessive heat as key to inhumane work conditions. Much effort throughout world history, beginning with the use of fire, has gone into protecting people from climatic discomforts.

But do we now believe that our results linking national culture to role stress are an artifact of temperature? No. Our respondents in the study Van de Vliert and Van Yperen reanalyzed were managers who had two or more levels of hierarchy below them. Most worked for organizations that had substantial resources. They were generally engaged in company-supported training programs conducted by university-based trainers and researchers. The Finns in our study were not sitting at their desks outside in the cold, and our respondents in Hong Kong and Singapore were not sitting outside in the sun. Our respondents were among the members of each society most likely to be protected from the discomforts of outside ambient temperature. Similarly, Hofstede's (1980) data were taken largely from service and marketing employees of a large U.S.-based multinational well known for reproducing its own physical facilities throughout the world. We did not collect the information about temperature in the workplace in the way that is typical of the temperature research that Van de Vliert and Van Yperen (1996) used to conceptually ground their paper and that would be needed to do the sort of analysis that they sought to do. Further, our experience in cross-cultural training is that managers do not rapidly change their customary way of behaving when they relocate from warmer to colder parts of the world or vice versa.

Van de Vliert and Van Yperen's (1996) primary line of argument is basically an individual-level logic. Hence, it applies most closely not to country-level research, but to individual-level role stress and work attitude research. Its principal significance is to suggest that future work attitude researchers should pay careful attention to workplace temperature and make appropriate statistical controls before seeking the effects of social processes. If temperature is indeed of such consequence, then a great deal of the organization behavior literature needs careful reassessment. The "herd" (Van de Vliert & Van Yperen, 1996: 997) that we are said to have been following by focusing on social predictors rather than temperature when studying work attitudes is not primarily composed of national culture scholars, but includes most members of several generations of organization scholars. Looking back to the tradition of industrial engineering, this group has not casually ignored workplace conditions but has considered and actively rejected their central role in predicting work attitudes (cf. Herzberg, Mausner, & Snyderman, 1959).

Industrial engineering since the Hawthorne studies has maintained an interest in physical work conditions, and perhaps organization studies more generally should reconsider problems of lighting intensity, the placement of fans, and climate control. It is important to be reminded that workplace characteristics typical in the countries that have the resources to support organization studies scholars may differ in unexpected ways from workplace

characteristics typical in other countries. Van de Vliert and Van Yperen (1996) have presented a useful caution that such variables deserve attention as organization studies becomes more global.

Instead of the individual physiological psychology emphasis of Van de Vliert and Van Yperen (1996), though, we favor their secondary explanation. Ambient temperature, along with various other geographic features, has affected the economies and histories of the world in ways that contribute to the diverse cultural orientations that multinationals experience (cf. Hofstede, 1980: 124).

The incidence of role overload and role ambiguity in our sample of nations is related to power distance, individualism, recent modernization, average ambient temperature, and probably other variables. The relative strengths of the various correlations obtained in a modest sample of countries can provide no definitive evidence for causal links between any of these variables. The need to interpret clusters and configurations of variables in international comparative analysis is likely to be a continuing fact of life. Multiple regression and structural equations are unlikely to sort these configurations into simple causal paths. Improvements over Hofstede's original measures are likely to help to some degree. The increasingly common finding that Hofstede's measures predict various criteria many years later does not mean that there has been no significant change of any kind in national cultures. For example, if contemporary measures of power distance became available, drawn from the populations represented by the respondents in the present project, a better test of links between power distance and role stress would be possible. Were Hofstede able to repeat his research with power distance measures of his choice, power distance might (or might not) prove an even stronger predictor. Were ambient temperature measures obtained from the work sites of the respondents, ambient temperature effects might (or might not) prove even stronger.

The contribution of the original study remains—Hofstede's database still appears to have more consequence than might have been expected. Eventually, the country scores he reported will be supplanted by better measures linked to improved concepts. In a world in which managers are likely to default to parochialism and ethnocentrism in international relations, his measures have proven useful. Other ongoing projects, including several mentioned in the present note and others noted by Van de Vliert and Van Yperen, are likely to prove of even greater future value.

REFERENCES

Adler, N. J. 1991. ***International dimensions of organizational behavior*** (2nd ed.). Boston: PWS-Kent.

Berry, J. W. 1976. ***Human ecology and cognitive style: Comparative studies in cultural and psychological adaptation.*** New York: Wiley.

Boyacigiller, N., & Adler, N. J. 1991. The parochial dinosaur: Organization science in a global context. ***Academy of Management Review,*** 16: 262–290.

Burton, M. L., & White, D. R. 1987. Cross-cultural surveys today. In B. J. Siegel, A. R. Beals, & S. A. Tyler (Eds.), ***Annual review of anthropology,*** vol. 16: 143–160. Palo Alto, CA: Annual Reviews.

Chinese Culture Connection. 1987. Chinese values and the search for culture-free dimensions of culture. ***Journal of Cross-Cultural Psychology,*** 18: 143–164.

Diener, E., Diener, M., & Diener, C. 1995. Factors predicting the subjective well-being of nations. ***Journal of Personality and Social Psychology,*** 69: 851–864.

Franke, R. H., Hofstede, G., & Bond, M. H. 1991. Cultural roots of economic performance: A research note. ***Strategic Management Journal,*** 12: 165–173.

Georgas, J., & Berry, J. W. 1995. An ecocultural taxonomy for cross-cultural psychology. ***Cross-Cultural Research,*** 29: 121–157.

Herzberg, F., Mausner, B., & Snyderman, B. ***The motivation to work*** (2nd ed.), New York: Wiley.

Hofstede, G. 1980. ***Culture's consequences: International differences in work-related values.*** Beverly Hills, CA: Sage.

Hofstede, G. 1983. Dimensions of national culture in 50 nations and three regions. In J. Deregowski, S. Dzuirawiec, & R. Annis (Eds.), ***Expiscations in cross-cultural psychology:*** 335–355. Lisse, the Netherlands: Swets and Zeitlinger.

Hofstede, G., & Bond, M. 1988. The Confucian connection: From cultural roots to economic growth. ***Organizational Dynamics,*** 16(4): 4–21.

Hoppe, M. H. 1990. ***A comparative study of country elites: International differences in work-related values and learning and their implications for management training and development.*** Unpublished doctoral dissertation, University of North Carolina at Chapel Hill.

International Survey Research. 1995. ***Employee attitudes towards their employers: An international perspective.*** London: International Survey Research.

Jackson, S. E., & Schuler, R. S. 1985. A meta-analysis and conceptual critique of research on role ambiguity and role conflict in work settings. ***Organizational Behavior and Human Decision Processes,*** 33: 1–21.

Lindner, S. B. 1981. ***An essay on trade and transformation.*** New York: Wiley.

Lynn, R. 1991. ***The secret of the miracle economy: Different national attitudes to competitiveness and money.*** Exeter, England: Social Affairs Unit.

Lynn, R., & Martin, T. 1995. National differences for thirty-seven nations in extroversion, neuroticism, psychoticism and economic, demographic and other correlates. ***Personality and Individual Differences,*** 19: 403–406.

Maznevski, M., & Peterson, M. F. 1997. Societal values, social interpretation, and multinational executive teams. In C. S. Granrose, & S. Oskamp (Eds.), ***Cross cultural work groups:*** 61–89. Thousand Oaks, CA: Sage.

MOW International Research Group. 1987. ***The meaning of working.*** London: Academic Press.

Murdock, G. P. 1981. ***Atlas of world cultures.*** Pittsburgh: University of Pittsburgh Press.

Peng, T. K. Peterson, M. F., & Shyi, Y. P. 1991. Quantitative methods in cross-cultural management research: Trends and equivalence issues. ***Journal of Organizational Behavior,*** 12: 87–108.

Peterson, M. F. 1997. Embedded organizational events: The units of process in organization science. ***Organization Science:*** In press.

Peterson, M. F., & Bliese, P. D. 1995. The critical dimensions of cultural differences: Strategies for quickly learning coping skills in OOTW deployment. In R. L. Phillips & M. R. Thurman (Eds.), ***Future soldiers and the quality imperative: The Army 2010 Conference:*** 351–380. Washington, DC: U.S. Government Printing Office.

Peterson, M. F., Elliott, J. R., Bliese, P. D., & Radford, M. H. B. 1996. Profile analysis of the sources of meaning reported by U.S. and Japanese local government managers. In P. Bamberger, M. Erez, & S. B. Bacharach (Eds.), ***Research in the sociology of organizations:*** 91–147. Greenwich, CT: JAI Press.

Peterson, M. F., Smith, P. B., Akande, A., Ayestaran, S., Bochner, S., Callan V., Cho, N. G., Jesuino, J. C., D'Amorim, M., Francois, P. H., Hofmann, K., Koopman, P. L., Leung, K., Lim, T. K., Mortazavi, S., Munene, J., Radford, M., Ropo, A., Savage, G., Setiadi, B., Sinha, T. N., Sorenson, R., & Viedge, C. 1995. Role conflict, ambiguity, and overload: A 21-nation study. ***Academy of Management Journal,*** 38: 429–452.

Peterson, M. F., Smith, P. B., Bond, M., & Misumi, J. 1990. Personal reliance on alternative event management processes in four countries. ***Group and Organization Studies,*** 15: 75–91.

Schwartz, S. H. 1990. Individualism-collectivism: Critique and proposed refinements. ***Journal of Cross-Cultural Psychology,*** 21: 139–157.

Schwartz, S. H. 1994. Cultural dimensions of values: Towards an understanding of national differences. In U. Kim, H. C. Triandis, & G. Yoon (Eds.), ***Individualism and collectivism: Theoretical and methodological issues:*** 85–119. Newbury Park, CA: Sage.

Scott, W. R. 1995. ***Institutions and organizations.*** Thousand Oaks, CA: Sage.

Smith, P. B., & Bond, M. H. 1993. Social psychology across cultures: Analysis and perspectives. Needham, MA: Allyn & Bacon.

Smith, P. B., Dugan, S., & Trompenaars, F. 1996. National culture and managerial values: A dimensional analysis across 43 nations. ***Journal of Cross-Cultural Psychology,*** 27: 231–264.

Smith, P. B., & Peterson, M. F. 1988. ***Leadership, organizations and culture.*** Beverly Hills, CA: Sage.

Smith, P. B., & Peterson, M. F. 1995. ***Beyond value comparisons: Sources used to give meaning to work events in twenty-five countries.*** Paper presented at the annual meeting of the Academy of Management, Vancouver.

Smith, P. B., Peterson, M. F., & Wang, Z. M. 1996. The manager as mediator of alternative meanings: A pilot study from China, the U.S.A. and U.K. ***Journal of International Business Studies,*** 27: 115–137.

Smith, P. B., & Schwartz, S. 1996. Values. In J. W. Berry, M. H. Segall, & C. Kagitcibasi (Eds.), ***Handbook of cross-cultural psychology*** (2nd ed.), vol 3: ***Social behavior and applications:*** 77–118. Needham Heights, MA: Allyn & Bacon.

Van de Vliert, E., & Van Yperen, N. W. 1996. Why cross-national difference in role overload? Don't overlook ambient temperature. ***Academy of Management Journal,*** 39: 986–1004.

Watkins, D., & Cheung, S. 1995. Culture, gender and response bias: An analysis of responses to the Self-Description Questionnaire. ***Journal of Cross-Cultural Psychology,*** 26: 490–504.

Yeh, R., & Lawrence, J. J. 1995. A note on Hofstede's cultural root to economic growth. ***Journal of International Business Studies,*** 26: 655–669.

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EFFECTS OF PREINTERVIEW BELIEFS ON APPLICANTS' REACTIONS TO CAMPUS INTERVIEWS

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This study explored whether applicants' preinterview job beliefs affected their interview behavior and postinterview reactions. I obtained 106 pre- and postinterview applicant surveys and audiotapes of 24 interviews. Results indicated that applicants' preinterview expectancies correlated positively with their impression management tactics, confirmatory questions, and perceptions of recruiters. Perceptions of recruiters partially mediated pre- to postinterview job-belief relationships. Job-knowledge confidence and the expected total number of job offers moderated effects of preinterview beliefs on confirmatory questions. Research and practical implications are discussed.

Campus recruitment represents a large expenditure for many organizations: Rynes and Boudreau (1986) estimated the average cost at 16 percent of the total human resource budget for *Fortune* 500 firms. Their data indicated that most of this money was spent on recruiters' salaries and travel. Given the recent trend toward organizational cost cutting, a significant question is what return firms can expect to receive on their campus recruitment investments. Available data have suggested that, given controls for applicants' preinterview beliefs about jobs, recruiters have only small, short-lived effects on outcomes (cf. Rynes, 1991).

Understanding why recruiter effects are small and short-lived is essential for determining how firms should best invest campus recruitment dollars. For example, if recruiters lack the interpersonal skills to exert strong effects, increased recruiter training may be needed (Rynes, 1991). If dual-purpose interviews—those with a joint focus on recruitment and screening—restrict applicants' capacity to process and to be influenced by the information recruiters convey (Barber, Hollenbeck, Tower, & Phillips, 1994), then funds should be used to restructure campus interviews. Alternatively, applicants' preinterview job beliefs may limit the influence recruiters can exert; this situation would indicate that recruitment dollars should be spent on marketing initiatives that promote positive early impressions. Until re-

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searchers explore these causes, they can offer little guidance to practitioners regarding cost-effective allocation of campus recruitment funds.

This note explores one potential cause of short-lived recruiter effects: the influence of applicants' preinterview beliefs on their interview behavior and postinterview evaluations of jobs. Two types of preinterview beliefs have been identified in prior research: beliefs about a job opportunity, or job beliefs, and expectancies. *Preinterview job beliefs*—what is anticipated about a job and an organization—are thought to influence intentions and decisions to accept a job offer (Wanous, Keon, & Latack, 1983). *Expectancies,* or an applicant's perceptions of the likelihood of receiving a job offer from an organization, are thought to affect his or her effort in pursuing the job (Vroom, 1966). Despite these theoretical links, researchers have overlooked the effects of applicants' preinterview beliefs on their interactions with campus recruiters and subsequent evaluations of jobs (Powell, 1991). To remedy this oversight, I examined whether confirmatory processes affect applicants' interview behavior and information processing. Specifically, I investigated: (1) the influence of applicants' preinterview beliefs on their own and campus recruiters' behavior, (2) whether preinterview beliefs bias applicants' perceptions of recruiters and subsequent job beliefs, and (3) the effects of several moderators on these relationships.

BACKGROUND AND HYPOTHESES

Effects of Applicants' Preinterview Beliefs on Interview Interactions

Previous research has documented several relevant relationships: Applicants' job beliefs appear to be the primary determinants of their attraction to organizations and their job choices (Schwab, Rynes, & Aldag, 1987). Expectancies, although related to effort in pursuing jobs, do not affect applicants' job choices (Vroom, 1966). Warm, personable campus recruiters improve applicants' attraction to jobs, thereby increasing their intent to accept the jobs if they are offered (Turban & Dougherty, 1992). In turn, job acceptance intentions predict final choices (Turban, Campion, & Eyring, 1995). Figure 1 (below) shows these relationships with bold arrows. However, the effects of applicants' preinterview beliefs on their interactions with recruiters and on their later evaluations of job opportunities have *not* been studied.

Social-psychological research provides a strong basis for predicting effects of applicants' preinterview beliefs on interview interactions. For example, people use impression management tactics when they believe that such tactics will help them gain valued outcomes, including job offers (von Baeyer, Sherk, & Zanna, 1981). *Impression management tactics* are short-term-oriented behaviors used to influence the images of oneself and others that arise in social interactions (Tedeschi & Melburg, 1984). Thus, an applicant who believes that he or she has a chance of receiving a job offer may try harder to make a good impression during the interview. Similarly, an applicant who believes that a job has many desirable attributes may use impression management to improve the chances of an offer.

Ferris and Judge (1991) suggested that the interview context should lead to the use of self-focused tactics such as self-promotion, or positive descriptions of one's attributes. However, they noted that recruiter liking for an applicant also raises recruiters' evaluations. Impression management tactics designed to increase liking include opinion conformity, or agreement with espoused attitudes of others, and other-enhancement, or flattery (Tedeschi & Melburg, 1984). If applicants perceive jobs as attractive or expect interviews to lead to job offers, they may have increased motivation to manage recruiter impressions by making themselves appear competent and likable.

> *Hypothesis 1. Applicants' preinterview job beliefs and expectancies will be positively related to their use of impression management tactics such as self-promotion, opinion conformity, and other-enhancement during campus interviews.*

Confirmatory behavior in interviews. Research has also shown that people's prior beliefs about a target person often lead them to behave in ways that are consistent with those beliefs when interacting with the target (Fiske, 1993). Specifically, positive or negative preinteraction beliefs prompt people to confirm those beliefs by asking closed-ended questions phrased to elicit positive or negative information. As one example, interviewers' preinterview beliefs about applicants' qualifications have been studied extensively as a determinant of interviewers' questioning strategies (e.g., Dougherty, Turban, & Callender, 1994; Neuberg, 1989; Neuberg, Judice, Virdin, & Carrillo, 1993). Generalizing from these findings suggests that *applicants'* preinterview beliefs may affect their interview behavior, particularly their questioning strategies.

Confirmatory behavior is especially prevalent when prior beliefs are strongly held and consistent with an individual's interaction goals—for example, positive prior beliefs are coupled with a desire to make a positive impression on the target (Fiske, 1993). Extending these findings to the recruitment context suggests that applicants who hold positive preinterview beliefs may wish to convey positive impressions of themselves. Given congruence in their preinterview beliefs and interaction goals, they may be more likely to ask questions phrased to elicit positive information. In contrast, applicants who hold less positive preinterview beliefs may have less incentive to pursue the jobs. They may be more likely to ask questions phrased to elicit negative information.

> *Hypothesis 2. Applicants' preinterview job beliefs and expectancies will be associated with their use of confirmatory questioning strategies during campus interview.*

Potential effects of confirmatory applicant behavior. Research has also indicated that the confirmatory behavior of one person may elicit responses from a target person that are consistent with the first person's prior beliefs. This phenomenon, known as the self-fulfilling prophecy, has been shown in many settings (cf. Blanck, 1993). However, several factors reduce the

chances for external confirmation of prior beliefs. For example, Swann and Ely (1984) found that in repeated interactions, confident targets behaved in ways that successfully disconfirmed individuals' erroneous prior beliefs. Likewise, Liden, Martin, and Parsons (1993) found that "cold" interviewer behavior led to poor performance from interviewees (targets) with low self-esteem but did not for interviewees with high self-esteem.

Although research has indicated that recruiters can elicit confirmatory responses from applicants (e.g., Dougherty et al., 1994), it is uncertain whether applicants can elicit confirmatory responses from recruiters. On the one hand, applicants' impression management tactics may evoke favorable recruiter reactions (e.g., Gilmore & Ferris, 1989), which might then be communicated through verbal and nonverbal channels (e.g., Phillips & Dipboye, 1989). On the other hand, recruiters typically control the interview interaction flow (Tullar, 1989) and access to the jobs; thus, they may be highly confident and less susceptible to confirmatory applicant questions. Furthermore, recruiters may convey unrequested information about jobs (Stevens, 1995), reducing the chances that confirmatory applicant behavior alone would induce recruiters to present primarily positive or negative job information. Because the existing literature does not yield clear-cut predictions regarding whether applicants will create self-fulfilling prophecies, no hypotheses are offered. However, the study design permitted preliminary exploration of this issue.

Applicants' Confirmatory Information Processing after Interviews

Independent of their effects on behavior, prior beliefs may also influence later beliefs via confirmatory cognitive processing tendencies. Specifically, people often preferentially "encode" and "retrieve" information that is congruent with their prior beliefs and discount or ignore incongruent information (Higgins & Bargh, 1987). Thus, congruent information may receive greater weight in later evaluations. Note that this information-processing bias may operate regardless of whether a target's actual responses confirm an individual's prior beliefs. Confirmatory information processing is prevalent when individuals have strong initial beliefs or when they lack the cognitive resources to process discrepant information (Stangor & McMillan, 1992).

Campus interviews often present applicants with conflicting demands (i.e., to respond to and to ask questions) that may reduce their cognitive resources for processing information (Barber et al., 1994). This reasoning suggests that applicants will be susceptible to confirmatory biases when encoding and later retrieving and integrating information about recruiters and jobs. Given the potential for confirmatory applicant behavior to elicit congruent recruiter responses, an independent assessment of recruiter behavior should be "partialed out" of applicants' ratings of recruiters to test this prediction.

Hypothesis 3. Applicants' preinterview job beliefs and ex-

pectancies will have a positive influence on their perceptions of recruiters, given controls for objective measures of recruiter behavior.

Prior research has established that applicants' perceptions of recruiters have independent effects on the applicants' postinterview job beliefs, given controls for preinterview job beliefs (e.g., Harris & Fink, 1987). If preinterview beliefs influence applicants' perceptions of recruiters, it seems likely that the effects of preinterview beliefs on postinterview beliefs about jobs would be partially mediated by applicants' perceptions of recruiters. In this way, preinterview beliefs may have both direct and indirect effects on postinterview beliefs, thereby increasing their overall impact on recruitment processes and outcomes.

Hypothesis 4. Applicants' perceptions of recruiters will partially mediate the relationship between their pre- and postinterview job beliefs and expectancies.

Figure 1 summarizes Hypotheses 1–4 graphically and integrates them with earlier findings, which are indicated by the relationships shown with bold arrows. The upper portion of the model represents the interview interaction and depicts one route through which applicants' preinterview beliefs may affect their interview reactions, namely, through *confirmatory applicant behavior* (Hypotheses 1 and 2). Such behavior may or may not affect recruiters' responses (shown by the arrow with the question mark). The lower portion of the model (shaded) represents applicants' cognitions and depicts the second route through which preinterview beliefs may affect applicants' interview reactions—that is, through *confirmatory information processing* (Hypotheses 3 and 4). These two routes are not necessarily independent: preinterview beliefs could induce either one or both confirmatory processes.

Besides testing the confirmatory behavior and information-processing hypotheses, I also examined how preinterview job beliefs influenced applicants' decision processes. Previous research has shown that (1) preinterview job beliefs and perceptions of recruiters influence postinterview job beliefs (e.g., Powell, 1991), (2) job beliefs determine acceptance intentions (e.g., Taylor & Bergmann, 1987), and (3) acceptance intentions determine acceptance decisions if job offers are forthcoming (Turban et al., 1995). I explored the basic model depicted in the lower half of Figure 1 as an approach to understanding how applicants process information about job opportunities after campus interviews.

Moderators of Confirmatory Tendencies in Applicants' Behavior and Information Processing

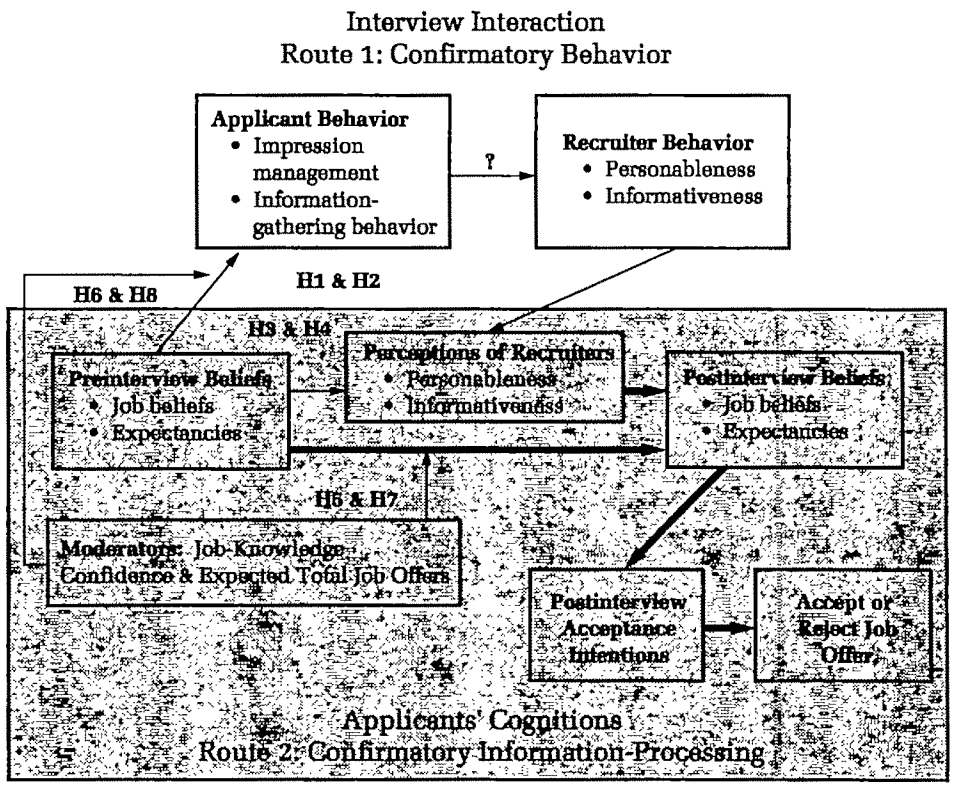
Social-psychological research has indicated that several boundary conditions constrain the effects of preinteraction beliefs on behavior and subsequent information processing. An important variable is an individual's confidence in his or her beliefs: people who lack confidence in their beliefs

may be less likely to preferentially encode and retrieve congruent information than people who have greater confidence in their beliefs (Stangor & McMillan, 1992). This prediction suggests that an applicant who has strong preinterview beliefs about a given job—high *job-knowledge confidence*—may show more confirmatory processing of congruent interview information.

> *Hypothesis 5. For applicants who have high job-knowledge confidence, pre- to postinterview job beliefs relationships will be stronger than they will be for applicants who have lower job-knowledge confidence.*

Similarly, people who lack confidence in their preinteraction beliefs also show less evidence of confirmatory information gathering (Higgins &

FIGURE 1
Potential Effects of Confirmatory Processes on Applicants' Postinterview Beliefs and Decisions[a]



[a]Bold arrows indicate relationships established by previous research. Solid arrows indicate major study hypotheses or research questions. The question mark indicates an undetermined relationship. The arrow between intentions and decisions is contingent on whether a job offer is received.

Bargh, 1987). This suggests that applicants who are less confident of their preinterview job beliefs may seek information that would decrease their uncertainty by asking disconfirmatory questions. Conversely, applicants who are more confident of their preinterview job beliefs may show greater use of confirmatory questions.

> *Hypothesis 6. Applicants who have high job-knowledge confidence will ask more confirmatory questions than will applicants who have lower job-knowledge confidence.*

A second variable that may moderate the effects of preinterview beliefs is applicants' interaction goals. Fiske and Neuberg (1990) argued that prior beliefs have less impact on behavior and information processing when people are motivated to form accurate impressions of targets. In support of this argument, Neuberg (1989) found that interviewers who sought to make accurate evaluations of applicants carefully avoided confirmatory questions. The desire to form accurate impressions may also prompt people to conserve cognitive resources for noting and processing information that is contrary to prior beliefs (Higgins & Bargh, 1987).

In interview contexts, applicants' expectations about the total number of job offers they will receive may influence their motivation to form accurate impressions. Payne (1982) showed that decision makers who must choose from many options try to reduce the number of options before evaluating them. Because site-visit interviews can be time consuming, applicants who expect to receive many job offers may seek to reduce their options by forming accurate job impressions during campus interviews. Doing this would permit them to decline site visits for unattractive jobs. Conversely, applicants who expect to receive few total job offers may wish to retain as many options as possible, to ensure that they obtain at least one viable job offer. Thus, they may avoid information that would disconfirm their preinterview beliefs, leading to stronger relationships between their pre- and postinterview job beliefs and greater use of confirmatory questions.

> *Hypothesis 7. For applicants who expect fewer total job offers, pre- to postinterview job beliefs relationships will be stronger than they will be for applicants who expect more total job offers.*

> *Hypothesis 8. Applicants who expect fewer total offers will ask more confirmatory questions than will applicants who expect more total offers.*

This study tested Hypotheses 1–8 using data collected as part of a larger study of campus recruitment practices (Stevens, 1995; Stevens & Kristof, 1995). Applicants provided both pre- and postinterview self-report data on their beliefs about jobs and postinterview ratings of recruiters. In addition, I also obtained interview audiotapes for a subset of applicants, which permitted me to derive objective measures of their behavior and of recruiters' responses.

METHODS

Sample and Procedures

The applicants were 106 students who used the placement services at a large university. They were mostly male (58%) and white (89%) and had an average age of 24.4 years. Analysis of their college majors revealed 17 percent in arts and sciences, 54 percent in business, and 30 percent in engineering; 70 percent were undergraduates, and 30 percent were graduate students. Applicants interviewed with recruiters from 65 firms.

To facilitate collection of the audiotape data, I first contacted recruiters regarding participation in the study. Of those contacted, 28 percent agreed to provide survey data, and 13 percent agreed to permit their interviews to be audiotaped. Applicants scheduled to interview with these recruiters (n = 450) were then contacted by phone and informed of the study's purpose and requirements. Preinterview surveys were returned by 125 (33%) of the 375 applicants who did not refuse to participate. Available data indicated that respondents had slightly higher grade point averages (GPAs) than nonrespondents. These applicants were mailed postinterview surveys within 24 hours of their interviews and final surveys at the end of the academic term, one to two months later. Of the applicants providing preinterview data, 106 (85%) returned the postinterview survey and 90 (72%) completed the final survey. Most surveys (85% to 90%) were returned by respondents within one week.

Interview audiotapes were also obtained for 24 recruiter-applicant pairs. To minimize this procedure's intrusiveness, I concealed microphones in the interview rooms and monitored taping from another room. Interviews were taped *only* when *both* parties consented, although recruiters were not told which interviews had been taped. Tapes were rated and coded to derive measures of applicant and recruiter behaviors. Raters and coders were not informed of the hypotheses or of applicants' preinterview beliefs.

Applicants' Self-Report Measures

The pre- and postinterview surveys assessed applicants' job beliefs and expectancies, whereas the postinterview survey asked only about applicants' perceptions of recruiters and intentions. The final survey elicited information about applicants' job offers and choices.

Job beliefs. To assess job beliefs, I gave applicants a list, adapted from Harris and Fink (1987), of 27 job and organizational attributes and asked them to indicate how likely it was that the job opportunities would provide each attribute (1 = not at all likely, 5 = very likely). Ratings were averaged across attributes to yield composite values (preinterview α = .88, postinterview α = .87).

Expectancies. Job-offer expectancies were measured by a single item: "How likely is it that you will receive a job offer from this organization?" (1 = not at all likely, 7 = extremely likely).

Job-knowledge confidence. I asked applicants to indicate for each of the

27 job attributes how confident they were of their knowledge about the attribute (1 = not at all confident, 5 = extremely confident). These confidence ratings were averaged to form a composite measure ($\alpha = .94$).

Total number of expected job offers. Applicants also indicated how many total job offers they expected to receive during their current job searches. Analyses indicated that this item correlated significantly with both the self-reported number of site visits ($r = .48$, $p < .001$) and the number of job offers actually received ($r = .53$, $p < .001$) several months later.

Perceptions of recruiters. According to Rynes (1991), recruiter personableness and informativeness are the two dimensions most relevant for understanding recruiters' effects on applicants' postinterview job perceptions and acceptance intentions. Therefore, I used the Harris and Fink (1987) measures of perceived recruiter personableness ($\alpha = .90$; sample item: "likable," 1 = strongly disagree, 7 = strongly agree) and informativeness ($\alpha = .67$; sample item: "spoke of the job in great detail," 1 = strongly disagree, 7 = strongly agree).

Intentions and decisions. Postinterview job-offer-acceptance intentions were assessed with two items used by Harris and Fink (1987): the likelihood of accepting a job offer and the likelihood of accepting a job offer immediately (1 = not at all likely, 7 = extremely likely; $\alpha = .66$). The final survey assessed applicants' job offers and accepted job offers.

Objective Measures Derived from Interview Audiotapes

A subset ($n = 24$) of applicants permitted their interviews to be audiotaped. Analyses revealed no significant differences between those who were and were not taped in background characteristics (e.g., age and GPA). However, taped applicants had lower pre- and postinterview acceptance intentions ($\bar{x} = 3.48$ and 3.02, respectively) than did the rest of the sample (preinterview $\bar{x} = 4.09$, $t_{104} = 1.98$, $p = .05$; postinterview $\bar{x} = 3.79$, $t_{104} = 2.26$, $p < .05$). They also reported using less impression management than the rest of the sample. No other differences in the survey measures were found. Two aspects of applicant behavior were assessed: impression management tactics and confirmatory questions. In addition, observers rated recruiters using the same survey items that applicants had used.

Impression management behaviors. Because Hypothesis 1 deals with observable behavior (versus self-reported behavior, which is potentially biased by confirmatory information processing), I used *coder frequency counts* of actual tactic use (gleaned from interview transcripts) and *observer ratings* of applicant impression management (made after listening to interview tapes). To assess the frequency of impression management tactics, pairs of coders used the coding system detailed in Stevens and Kristof (1995). For this study, I concentrated on the three most frequently studied tactics: self-promotion (K = .69), opinion conformity (K = .73), and other-enhancement (K = .78). In addition, different pairs of observers listened to the interview tapes and rated applicant impression management on behavioral items (e.g., "complimented the recruiter or organization"; cf. Stevens & Kristof, 1995).

Analyses indicated reasonable convergence across observers (mean $r = .61$; 65 percent of ratings within one scale point), so I averaged their separate item values. The composites formed from these items yielded acceptable reliabilities: the self-promotion α was .93; opinion conformity was .74; and other-enhancement was .85.

Confirmatory questions. Whether a question was confirmatory in this context depended partly on its structure—closed-ended questions constrain responses more than do open-ended questions—and partly on preinterview beliefs, which could be positive or negative. Each applicant question was coded according to whether it was positive and closed-ended or negative and closed-ended. *Positive-closed questions* were defined as those that asked about attractive features of or things present in a job or organization and restricted the range of possible responses (i.e., to yes, no, or a single factual response). *Negative-closed questions* were defined as those that asked about unattractive features of or things absent from the job or organization and similarly restricted the range of possible responses. It should be noted that positive-closed questions are confirmatory when preinterview beliefs are also positive; if preinterview beliefs are negative, then positive-closed questions are disconfirmatory. The final measures of applicants' questioning strategies were the numbers of positive-closed and negative-closed questions. Agreement between coders ranged from 70 to 89 percent. I resolved all disagreements by using category definitions.

Objective measures of recruiters. The observers who rated applicants' impression management also rated recruiters using the same survey items that applicants had used. I averaged ratings for each item and then averaged these values to form composites parallel to those derived from applicants' ratings (personableness, $\alpha = .87$; informativeness, $\alpha = .63$).

RESULTS

Table 1 shows the means, standard deviations, and correlations for the applicant self-report measures ($N = 106$), whereas Table 2 provides the means, standard deviations, and correlations between the self-report measures and the audiotape measures ($n = 24$).

Hypotheses 1 and 2: Applicants' Confirmatory Behavior during Interviews

Hypotheses 1 and 2 predict that preinterview beliefs will be associated with objective measures of applicants' impression management tactics and confirmatory questioning strategies. As indicated in Table 2, there was weak support for the predicted relationship between preinterview *job beliefs* and these behaviors: applicants' preinterview job beliefs correlated with observers' ratings of applicant other-enhancement ($r = .41$, $p < .05$) and with their use of negative-closed questions ($r = -.28$, $p < .10$). However, stronger support emerged for the predicted relationships between preinterview *expectancies* and applicants' behavior. Significant correlations were found for observers' ratings of self-promotion ($r = .28$, $p < .10$) and other-enhancement

TABLE 1
Means, Standard Deviations, Correlations, and Alphas for Applicant Self-Report Variables[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
Preinterview job measures												
1. Job beliefs	3.68	0.45	(.88)									
2. Expectancy	4.66	0.87	.33**									
Moderators												
3. Confidence	3.67	0.54	.54**	.28**	(.94)							
4. Expected number of offers	2.49	1.48	.10	.27**	.01							
Perceptions of recruiter												
5. Recruiter personableness	5.28	0.97	.32**	.22*	.30**	−.09	(.90)					
6. Recruiter informativeness	4.11	0.93	.20*	.16	.17	.05	.58**	(.67)				
Postinterview job measures												
7. Job beliefs	3.69	0.45	.77**	.26**	.36**	.05	.50**	.35**	(.87)			
8. Expectancy	4.21	1.31	.19	.34**	.20*	.35**	.36**	.27**	.33**			
9. Intentions	3.61	1.49	.41**	.15	.32**	−.07	.24*	.10	.47**	.12	(.66)	
Final survey[b]												
10. Job offers	0.17	0.38	.04	.15	.03	.32**	.05	.31**	−.02	.15	.14	
11. Accepted offers	0.40	0.51	.36	.31	.13	−.42	.15	−.30	.26	−.27	.56*	

[a] $N = 106$, except where indicated otherwise. Alpha reliabilities are shown in parentheses along the diagonal. For job beliefs, job-knowledge confidence, and expected number of job offers, scale and item values ranged from 1 (low) to 5 (high). For expectancies, intentions, and perceptions of recruiters, scale values ranged from 1 (low) to 7 (high). For job offers and accepted offers, 0 = no, 1 = yes.

[b] For job offers, $n = 90$. For accepted offers, $n = 15$.

* $p < .05$

** $p < .01$

Both two-tailed tests.

TABLE 2
Means, Standard Deviations, and Correlations for Joint Survey-Audiotape Data[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Observer-rated impression management																
1. Self-promotion	5.29	0.88	(.93)													
2. Opinion conformity	3.49	1.50	.19	(.74)												
3. Other-enhancement	4.50	1.06	.43*	.08	(.85)											
Coder frequencies																
4. Self-promotion	32.50	21.57	.13	.10	.13											
5. Opinion conformity	1.58	2.36	.13	.32*	.28	−.21										
6. Other-enhancement	0.83	1.13	.33*	.50**	.53**	.13	.15									
7. Positive-closed questions	2.17	1.99	.16	.06	.17	−.37*	.38*	.13								
8. Negative-closed questions	0.42	0.58	−.32†	−.30†	−.26	.02	−.12	−.48**	−.10							
Preinterview beliefs																
9. Job beliefs	3.60	0.47	.22	−.23	.41*	−.08	−.05	.17	.18	−.28†						
10. Job offer expectancy	4.84	0.94	.28†	.19	.50**	−.16	.35*	.41*	.33†	−.41*	.53**					
Moderators																
11. Job-knowledge confidence	3.66	0.61	.01	.00	.36*	−.11	.43*	.26	.13	−.18	.49**	.53**				
12. Expected number of offers	2.96	1.55	.32†	−.20	.12	−.50**	.21	.05	.36*	−.27	.16	.14	−.10			
Observer ratings of recruiter																
13. Personableness	4.77	0.69	.16	.14	.32†	.06	−.06	.10	−.36†	.03	−.10	−.03	−.03	.01	(.87)	
14. Informativeness	4.01	0.80	−.01	.12	−.09	−.24	.24	.04	.23	.24	−.44*	−.30	−.23	.32	.07	(.63)
Applicant ratings of recruiter																
15. Personableness	4.96	0.87	.32†	.08	.32†	−.06	.22	.14	.22	−.19	.19	.35*	.40*	.03	.32†	.22
16. Informativeness	3.95	0.99	.16	.02	.27	.03	.18	.21	.34*	−.02	.14	.21	.21	.09	.03	.43*
Postinterview beliefs																
17. Job beliefs	3.57	0.49	.23	−.05	.31†	−.09	−.23	.22	.09	−.29†	.78**	.45*	.28	.20	.07	−.19
18. Expectancy	4.33	1.46	.08	−.15	.06	−.51**	.31†	−.15	.25	−.17	.06	.20	.10	.62**	.09	.45*

[a] Subsample $n = 24$. Alphas are on the diagonal. For observer ratings of applicant impression management, observer and applicant ratings of recruiters, and expectancies, scale and item values range from 1 (low) to 7 (high). For job attributes, confidence ratings, and expected number of offers, values range from 1 (low) to 5 (high). For coder frequencies of applicant impression management, expressive behaviors, and information-gathering behavior, values represented the actual frequency counts for each variable.

† $p < .10$

* $p < .05$

** $p < .01$

One-tailed tests except for r's between observer-rated personableness and positive-closed questions and between observer-rated informativeness and job beliefs, which represent two-tailed tests.

($r = .50$, $p < .01$) as well as for coders' frequency counts of opinion conformity ($r = .35$, $p < .05$) and other-enhancement ($r = .41$, $p < .05$). This pattern supports Hypothesis 1. Similarly, applicants' expectancies correlated with the number of both positive-closed ($r = .33$, $p < .05$) and negative-closed questions ($r = -.41$, $p < .05$), supporting Hypothesis 2.

Evidence pertaining to self-fulfilling prophecies. Given support for Hypotheses 1 and 2, a key question is whether applicants' preinterview beliefs created self-fulfilling prophecies. To answer this question, I examined several relationships using two-tailed probability estimates, because there was uncertainty about their directionality (see Table 2). However, the only significant results were *opposite* in direction to what would be predicted by the presence of self-fulfilling prophecies: positive-closed questions correlated negatively with observers' ratings of recruiter personableness ($r = -.36$, $p < .10$), and preinterview job beliefs correlated negatively with observers' ratings of recruiter informativeness ($r = -.44$, $p < .05$). In summary, the data showed no evidence of self-fulfilling prophecies in applicants' interactions with campus recruiters.

Hypotheses 3 and 4: Applicants' Confirmatory Information Processing

Hypothesis 3 predicts that applicants' preinterview beliefs will predict their perceptions of recruiters, even given the presence of controls for objective ratings of recruiters. To test this hypothesis, I regressed applicants' ratings of recruiters separately on each of the corresponding observers' ratings (step 1) and then on each of the preinterview beliefs (step 2), using the audiotaped subsample. After controlling for observers' ratings, I found no effects of preinterview job beliefs on perceived personableness ($\Delta R^2 = .05$, $F = 1.20$, n.s.) or informativeness ($\Delta R^2 = .07$, $F = 1.86$, n.s.). However, adding preinterview expectancies did significantly increase explained variance after controls for objective ratings were added (personableness, $\Delta R^2 = .13$, $F = 3.80$, $p = .06$; informativeness, $\Delta R^2 = .10$, $F = 3.10$, $p < .10$). This pattern provided partial support for Hypothesis 3.

Hypothesis 4 predicts partial mediation of the relationship between pre- and postinterview beliefs by applicants' perceptions of recruiters. Regression analyses using the full sample supported the effects of preinterview beliefs on perceptions of recruiters (for job beliefs, $\Delta R^2 = .11$, $F = 5.85$, $p < .005$; for expectancies, $\Delta R^2 = .05$, $F = 2.72$, $p < .10$). Similarly, the effects of perceptions of recruiters on postinterview beliefs were also significant (for job beliefs, $\Delta R^2 = .27$, $F = 18.25$, $p < .001$; for expectancies, $\Delta R^2 = .15$, $F = 8.81$, $p < .001$). Using procedures suggested by Clogg, Petkova, and Shihadeh (1992), I found that adding the recruiter variables to the regression equation testing the effects of preinterview beliefs on postinterview beliefs significantly decreased the preinterview-beliefs beta, indicating a partial mediation relationship (for job beliefs, the full-model $\beta = .67$, the reduced-model $\beta = .77$, $\beta_{\text{reduced}} - \beta_{\text{full}} = .10$, $t_{102} = 38.93$, $p < .001$; for expectancies, the full-model $\beta = .27$, the reduced-model $\beta = .34$, $\beta_{\text{reduced}} - \beta_{\text{full}} = .07$, $t_{102} = 2.21$, $p < .01$).

Besides conducting these tests of mediation, I used EQS 5.2 (Bentler, 1986) to assess whether preinterview beliefs had effects on applicants' acceptance intentions. Tests of the data indicated that the recruiter personableness variable deviated somewhat from normality; therefore, I normalized it by squaring for inclusion in the analysis. Measurement-error-variance estimates were fixed using scale reliabilities. Tests of the measurement model indicated a good fit (comparative fit index [CFI] = .929 and normed fit index [NFI] = .907) with no substantive modifications recommended. Figure 2 shows a summary of the structural model results; path coefficients represent standardized maximum likelihood estimates. The chi-square test, which indicates whether the model deviates from an ideal fit, was significant (χ^2 [df = 8, N = 106] = 18.55, $p < .05$). However, both the CFI and NFI values (.943 and .905, respectively) suggested that the proposed model yielded an excellent fit. Furthermore, a comparison between the proposed model and a reduced model that eliminated the path from preinterview job beliefs to perceptions of recruiters (CFI = .898, NFI = .852, χ^2 [df = 10; N = 106] = 28.94, $p < .01$) showed that the proposed model significantly *improved* model fit over the reduced model (χ^2 [2] = 10.38, $p < .01$).

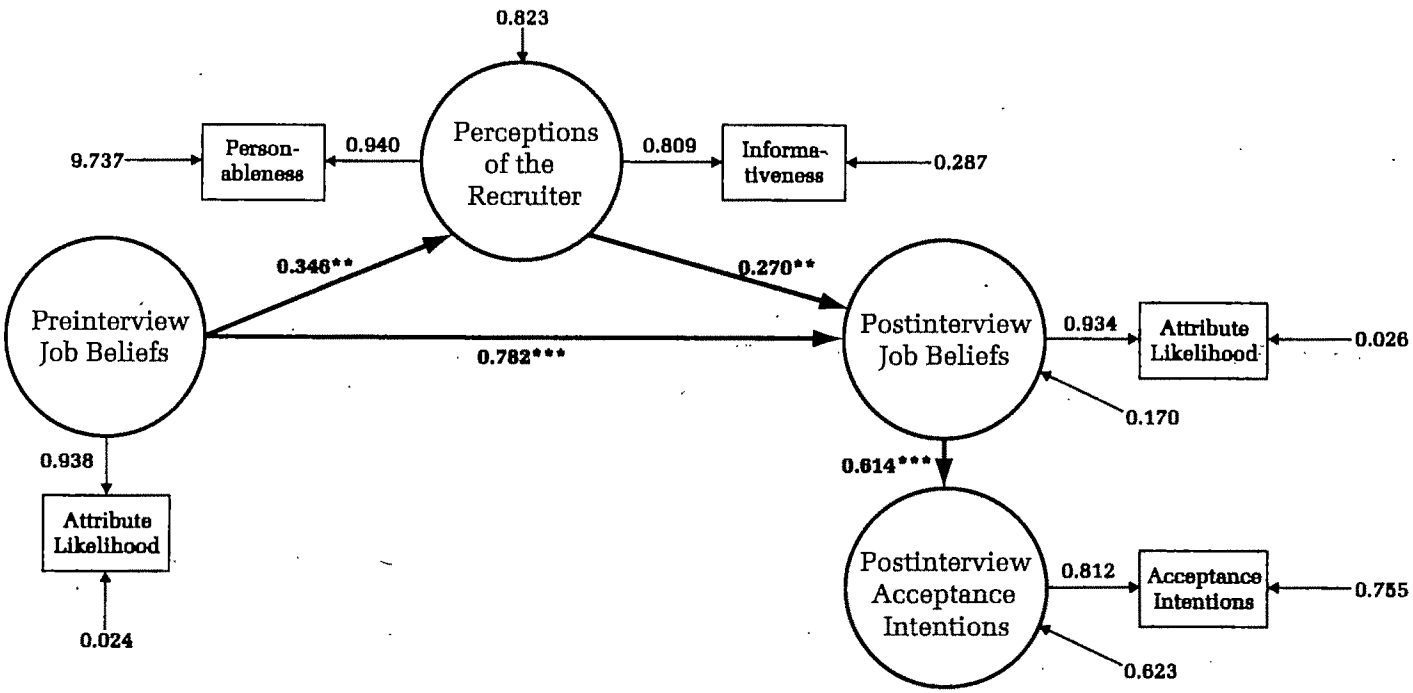
Hypotheses 5–8: Moderating Effects of Job-Knowledge Confidence and Expected Job Offers

Self-report data (N = 106). To test Hypotheses 5 and 7, I regressed applicants' postinterview job beliefs on the preinterview measure and each moderator (step 1), using the full sample. At step 2, the product of preinterview job beliefs and the appropriate moderator was added. Results for applicants' preinterview job-knowledge confidence indicated no support for Hypothesis 5 (ΔR^2 = .00, $F < 1$, n.s.). However, the interaction of preinterview job beliefs and the expected number of offers did improve explained variance in postinterview job beliefs (ΔR^2 = .03, β = −1.65, F = 7.89, $p < .01$). Subsequent analyses showed that, among applicants who expected fewer total job offers, there was a stronger relationship between pre- and postinterview job beliefs (r = .80, $p < .001$) than there was among applicants who expected more offers (r = .61, $p < .001$), as predicted by Hypothesis 7.

Joint survey-audiotape data (n = 24). I also used hierarchical regression analysis to examine whether job-knowledge confidence and expected total offers moderated the effects of preinterview job beliefs on positive- and negative-closed questions in the audiotape subsample (Hypotheses 6 and 8). Results indicated no interaction for preinterview job beliefs and either moderator on positive-closed questions. However, the interaction terms significantly increased the change in R^2 for negative-closed questions (preinterview job beliefs × job-knowledge confidence, ΔR^2 = .34, β = 8.03, F = 11.57, $p < .01$; preinterview job beliefs × expected job offers, ΔR^2 = .22, β = 3.66, F = 6.60, $p < .05$).

To determine whether the patterns supported the hypotheses, I graphed the interactions. Contrary to Hypothesis 6, the pattern indicated that confident applicants asked more negative-closed questions if they had positive

FIGURE 2
Results of Structural Equation Modeling Analyses on Applicants' Self-Report Measures[a]



N= 106. Figures shown represent standardized maximum likelihood estimates. Boldface numbers are path coefficients.
** $p < .01$
*** $p < .001$

preinterview job beliefs (i.e., a *disconfirmatory* pattern), whereas applicants who lacked job-knowledge confidence asked more negative-closed questions when they had negative preinterview job beliefs (i.e., a *confirmatory* pattern). Because this pattern contradicted Hypothesis 6, I examined the correlations among several preinterview measures separately for applicants with high and low confidence about their job knowledge. Analyses indicated that *low*-job-knowledge-confidence applicants had higher acceptance intentions when they thought it was likely that they would receive job offers from the organizations with which they had the focal interviews ($r = .43$, $p < .10$), whereas *high*-job-knowledge-confidence applicants showed no relationship between expectancies and acceptance intentions ($r = .05$, n.s.). This pattern suggested that applicants who lacked job-knowledge confidence but who viewed their chances for job offers as high may not have wanted to jeopardize their chances by signaling disinterest through negative-closed questions. Conversely, applicants who lacked job-knowledge confidence but who saw little chance for job offers may have thought that they had little to lose by asking negative-closed questions.

The graph for the interaction of preinterview job beliefs and the expected number of job offers did reveal the pattern predicted by Hypothesis 8. Specifically, among applicants who expected to receive *few* total offers, positive preinterview beliefs were associated with fewer negative-closed questions, and negative preinterview job beliefs were associated with more negative-closed questions (i.e., confirmatory behavior). Conversely, applicants who expected to receive *many* total job offers asked fewer negative-closed questions when their preinterview job beliefs were negative and more negative-closed questions when their preinterview job beliefs were positive (the predicted disconfirmatory pattern).

DISCUSSION

Findings from this study support several key hypotheses concerning preinterview beliefs as determinants of applicants' interview behavior and information processing. With regard to applicants' behavior, analyses revealed that their expectancies about job offers predicted their use of impression management and confirmatory questions, as rated by independent observers (Hypotheses 1 and 2). These findings support the expectancy theory prediction that higher expectancies elicit greater effort in pursuing job opportunities. However, the data showed scant evidence of the presence of self-fulfilling prophecies in recruiters' responses. This finding should be regarded as tentative, pending further investigation. Nonetheless, a key difference between this setting and those in which self-fulfilling prophecies have typically been studied (cf. Blanck, 1993) is that applicants largely lacked control over their interactions with recruiters. Future research should examine the role of interactional control in generating self-fulfilling prophecies.

With regard to applicants' information processing, the self-report data

indicated that applicants who expected to receive job offers evaluated their recruiters more positively, regardless of "objective" recruiter behavior (Hypothesis 3). Applicants' perceptions of recruiters partially mediated the relationship between their pre- and postinterview beliefs (Hypothesis 4); postinterview job beliefs in turn predicted acceptance intentions (see Figure 2). Among applicants who received job offers from organizations for which they had provided data, acceptance intentions explained 31 percent of the variance in applicants' decisions (see Table 1). Taken together, these findings suggest that recruiter effects may be small and short-lived because applicants' preinterview beliefs bias their postinterview perceptions and decision processes. This conclusion should be corroborated using more controlled methods. Nonetheless, it does suggest that applicants' acceptance decisions may be largely determined before formal recruitment activities begin.

Contrary to the hypothesis, applicants' confidence in their preinterview job knowledge did not moderate the relationship between their pre- and postinterview beliefs. Moreover, the data revealed that applicants who were confident that they knew about the jobs' attributes engaged in *disconfirmatory* behavior: they asked more *negative*-closed questions when their preinterview beliefs were *positive*. Perhaps the importance of their job choices offset job-knowledge confidence as a factor in applicants' behavior and information processing. Applicants who lacked confidence about their job knowledge and who had negative preinterview beliefs also asked more negative-closed questions, indicating a confirmatory pattern. The latter effect appeared to be a defensive reaction—these applicants assumed they had little chance of receiving job offers and asked questions geared toward confirming their negative (but uncertain) preconceptions. Because these findings are based on a small sample, they should be replicated under controlled conditions. Yet these results are intriguing because they suggest that applicants may adopt widely divergent approaches to verify their preinterview information about job opportunities.

Conversely, the data *did* yield the predicted pattern of moderation for total job offers. Applicants who expected to receive fewer total offers asked fewer negative-closed questions, and the correlations between their pre- and postinterview job beliefs were stronger (i.e., a confirmatory pattern) when their preinterview job beliefs were positive. One implication of these findings is that recruiters may be more influential in modifying the perceptions of applicants who are in greater demand and who perhaps have more marketable skills.

The study results offer a complex portrait of applicants' behavior and information processing during campus interviews. Overall, applicants presented themselves positively (through impression management tactics) and asked positive-closed questions (these accounted for a third of the total questions asked). However, applicants who expected to receive job offers engaged in more impression management, asked more confirmatory questions, and showed a positive bias in their postinterview perceptions of re-

cruiters. Applicants' preinterview job beliefs showed few direct effects on their behavior but were moderated by their job-knowledge confidence and total expected numbers of job offers. This pattern suggests that both confirmatory behavior and confirmatory information processing may occur; in the absence of self-fulfilling prophecies, however, it seems that applicants' reactions are most affected by confirmatory information processing.

These results do not rule out improved recruiter training or restructured interview formats as important factors in increasing applicant attraction. Additional work should focus on how changing these features affects recruitment outcomes. Nonetheless, the current study does indicate that human resources specialists should carefully consider the preinterview impressions created through advertising, promotions, and media coverage. This point is underscored by the fact that this study reveals nothing about the qualifications or thought processes of applicants who opted out of the selection process *before* the campus interview stage.

Several limitations of the study should be mentioned. A primary concern is the size and representativeness of the samples. These are consequences of an intrusive but comprehensive data collection process. Data on the representativeness of the full sample suggested that responding applicants had slightly higher GPAs than nonrespondents. The similarity of the survey findings to those of earlier studies (e.g., Harris & Fink, 1987) provides some assurance that this sample was reasonably representative. However, the audiotape sample was small ($n = 24$), and taped applicants reported less interest than those who were not taped in the jobs about which they provided data. This pattern may have obscured relationships between their preinterview beliefs and confirmatory behavior.

A second limitation pertains to the causal inferences that can be drawn. Although causal relationships can be inferred for results of the EQS analyses, such inferences would be inappropriate for analyses involving the audiotape data. The data collection timing does preclude reverse causality for several relationships (i.e., between applicants' interview behavior and their preinterview beliefs), but the nonrandom subsample cannot eliminate unmeasured third variables as an alternative explanation.

Third, it is possible that common method variance or testing effects influenced some of the findings. For example, the relationships observed among various self-report measures may be artificially inflated by the common measurement methods used. Another possibility is that the preinterview survey administration sensitized applicants to its content and this, rather than confirmatory bias, caused them to respond consistently on the postinterview survey. Although this explanation cannot be eliminated, the fact that applicants typically completed the postinterview survey 24 hours or more after their interviews reduces the chances that testing or a consistency response bias fully explains the results. Unfortunately, examining confirmatory information processing in field settings typically does not provide the design flexibility needed to rule out testing or common method variance effects.

As organizations continue to cut costs, human resource professionals

must demonstrate their contributions to the bottom line. Increased use of technologies such as interactive media and video conferencing may add pressure to diminish reliance on campus recruiters, especially given that their influence on applicants is limited. It is essential that researchers explore further the factors that affect applicants' attraction and decision processes so that companies can make wise decisions about recruitment investments. The current study provides preliminary data on this issue. By clarifying the limits of applicants' susceptibility to recruiter influence, the current results provide a basis for more extensive work on this important topic.

REFERENCES

Barber, A. E., Hollenbeck, J. R., Tower, S. L., & Phillips, J. M. 1994. The effects of interview focus on recruitment effectiveness: A field experiment. ***Journal of Applied Psychology,*** 79: 886–896.

Bentler, P. M. 1986. ***Theory and implementation of EQS: A structural equations program.*** Los Angeles: BMDP Statistical Software.

Blanck, P. D. 1993. ***Interpersonal expectations: Theory, research, and applications.*** New York: Cambridge University Press.

Clogg, C. C., Petkova, E., & Shihadeh, E. S. 1992. Statistical methods for analyzing collapsibility in regression models. ***Journal of Educational Statistics,*** 17: 51–74.

Dougherty, T. W., Turban, D. B., & Callender, J. C. 1994. Confirming first impressions in the employment interview: A field study of interviewer behavior. ***Journal of Applied Psychology,*** 79: 659–665.

Ferris, G. R., & Judge, T. A. 1991. Personnel/human resources management: A political influence perspective. ***Journal of Management,*** 17: 447–488.

Fiske, S. T. 1993. Social cognition and social perception. In M. R. Rosenzweig & L. W. Porter (Eds.), ***Annual review of psychology,*** vol. 44: 155–194. Palo Alto, CA: Annual Reviews.

Fiske, S. T., & Neuberg, S. L. 1990. A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), ***Advances in experimental social psychology,*** vol. 23: 1–74. San Diego: Academic Press.

Gilmore, D. C., & Ferris, G. R. 1989. The effects of applicant impression management tactics on interviewer judgments. ***Journal of Management,*** 15: 557–564.

Harris, M. M., & Fink, L. S. 1987. A field study of applicant reactions to employment opportunities: Does the recruiter make a difference? ***Personnel Psychology,*** 40: 765–784.

Higgins, E. T., & Bargh, J. A. 1987. Social cognition and social perception. In M. R. Rosenzweig & L. W. Porter (Eds.), ***Annual review of psychology,*** vol. 38: 369–425. Palo Alto, CA: Annual Reviews.

Liden, R. C., Martin, C. L., & Parsons, C. K. 1993. Interviewer and applicant behaviors in employment interviews. ***Academy of Management Journal,*** 36: 372–386.

Neuberg, S. L. 1989. The goal of forming accurate impressions during social interactions: Attenuating the impact of negative expectancies. ***Journal of Personality and Social Psychology,*** 56: 374–386.

Neuberg, S. L., Judice, T. N., Virdin, L. M., & Carrillo, M. A. 1993. Perceiver self-presentational goals as moderators of expectancy influences: Ingratiation and the disconfirmation of negative expectancies. ***Journal of Personality and Social Psychology,*** 64: 409–420.

Payne, J. W. 1982. Contingent decision behavior. ***Psychological Bulletin,*** 92: 382–402.

Phillips, A. P., & Dipboye, R. L. 1989. Correlational tests of predictions from a process model of the interview. ***Journal of Applied Psychology,*** 74: 41–52.

Powell, G. N. 1991. Applicant reactions to the initial employment interview: Exploring theoretical and methodological issues. ***Personnel Psychology,*** 44: 67–83.

Rynes, S. L. 1991. Recruitment, job choice, and post-hire consequences: A call for new research directions. In M. D. Dunnette (Ed.), ***Handbook of industrial and organizational psychology*** (2nd ed.): 399–444. Palo Alto, CA: Consulting Psychologists.

Rynes, S. L., & Boudreau, J. W. 1986. College recruiting in large organizations: Practice, evaluation, and research implications. ***Personnel Psychology,*** 39: 729–757.

Schwab, D. P., Rynes, S. L., & Aldag, R. J. 1987. Theories and research on job search and choice. In K. M. Rowland & G. R. Ferris (Eds.), ***Research in personnel and human resources management,*** vol. 5. 129–166. Greenwich, CT: JAI Press.

Stangor, C., & McMillan, D. 1992. Memory for expectancy-congruent and expectancy-incongruent information: A review of the social and social developmental literatures. ***Psychological Bulletin,*** 111: 42–61.

Stevens, C. K. 1995. ***Antecedents of recruiter behavior during the campus interview.*** Paper presented at the annual meeting of the Society for Industrial/Organizational Psychology, Orlando, FL.

Stevens, C. K., & Kristof, A. L. 1995. Making the right impression: A field study of applicant impression management during job interviews. ***Journal of Applied Psychology,*** 80: 587–606.

Swann, W. B., Jr., & Ely, R. J. 1984. A battle of wills: Self-verification versus behavioral confirmation. ***Journal of Personality and Social Psychology,*** 46: 1287–1302.

Taylor, M. S., & Bergmann, T. J. 1987. Organizational recruitment activities and applicants' reactions at different stages of the recruitment process. ***Personnel Psychology,*** 40: 261–285.

Tedeschi, J. T., & Melburg, V. 1984. Impression management and influence in organizations. In S. B. Bacharach & E. J. Lawler (Eds.), ***Research in the sociology of organizations,*** vol. 3: 31–58. Greenwich, CT: JAI Press.

Tullar, W. L. 1989. Relational control in the employment interview. ***Journal of Applied Psychology,*** 74: 941–977.

Turban, D. B., Campion, J. E., & Eyring, A. R. 1995. Factors related to job acceptance decisions of college recruits. ***Journal of Vocational Behavior,*** 47: 193–213.

Turban, D. B., & Dougherty, T. W. 1992. Influence of campus recruiting on applicant attraction to firms. ***Academy of Management Journal,*** 35: 739–765.

von Baeyer, C. L., Sherk, D. L., & Zanna, M. P. 1981. Impression management in the job interview: When the female applicant meets the male (chauvinist) interviewer. ***Personality and Social Psychology Bulletin,*** 7: 45–51.

Vroom, V. H. 1966. Organizational choice: A study of pre and post decision processes. ***Organizational Behavior and Human Performance,*** 1: 212–225.

Wanous, J. P., Keon, T. L., & Latack, J. C. 1983. Expectancy theory and occupational/organizational choices: A review and test. ***Organizational Behavior and Human Performance,*** 32: 66–86.

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THE CONSEQUENCES OF INFORMAL JOB FINDING FOR MEN AND WOMEN

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This study examined the role that the gender of job informants plays in the job-finding process for men and women. Data on job seekers at a large bank were used to test hypotheses derived from work on social distance and gender segregation. Our results suggest that jobs found via cross-gender referrals are hierarchically lower than the jobs of the informants and that women refer job seekers to gender-typical jobs more than men do.

Researchers, practitioners, and the public have expressed an interest in the way that the patterns of communication between men and women influence the job acquisition process. Although much of this work focuses on differences in the job-finding networks of men and women (Reskin, 1993), no study has examined the effects of reliance on specific others as a critical variable associated with job finding.

In this research note, we report a preliminary investigation of job finding through same-gender and cross-gender contacts. We argue that a refined examination of men's and women's interaction patterns can contribute insights into the persistence of gender segregation in the workplace (Ely, 1995). In particular, we contend that interorganizational segregation reflects a persistent physical, social, and symbolic distance between men and women that permeates firms. Our analysis examines two outcomes that are critical for understanding the persistence of gender segregation in the workplace: (1) the gender composition[1] of the job a job seeker accepts and (2) the hierarchical location of the job seeker's job relative to the job of the person who informed him or her about the job opening.

Previous research has focused on three separate issues: (1) Are men and women equally likely to utilize personal networks in job search? (2) Are men and women equally successful at gaining employment through informal networks? And (3) does the use of informal networks produce similar outcomes

We are grateful to the reviewers of the *Academy of Management Journal* for their insightful and useful comments on prior versions of this work.

[1] The gender composition of a job refers to the proportions of men and women holding it (having the same job title).

for men and women? Studies employing elaborate statistical controls and large representative samples (cf. Marsden & Campbell, 1990; Moore, 1990) have found that female job searchers appeared to use informal networks and to find jobs through such networks roughly as often as men did. Yet similar network utilization produces greater network returns in salary and promotion for men (see Morrison and Von Glinow [1990] for a review). Currently, researchers are focusing on the complex interplays between group affiliation, structural power, and information dispersion to explain these differences (Blum, Fields, & Goodman, 1994; Brenner, Tomkiewicz, & Schein, 1989; Ibarra, 1993, 1995; Moore, 1990; Noe, 1988; Ohlott, Rudeman, & McCauley, 1974; Perry, Davis-Blake, & Kulik, 1994).

THEORETICAL BACKGROUND

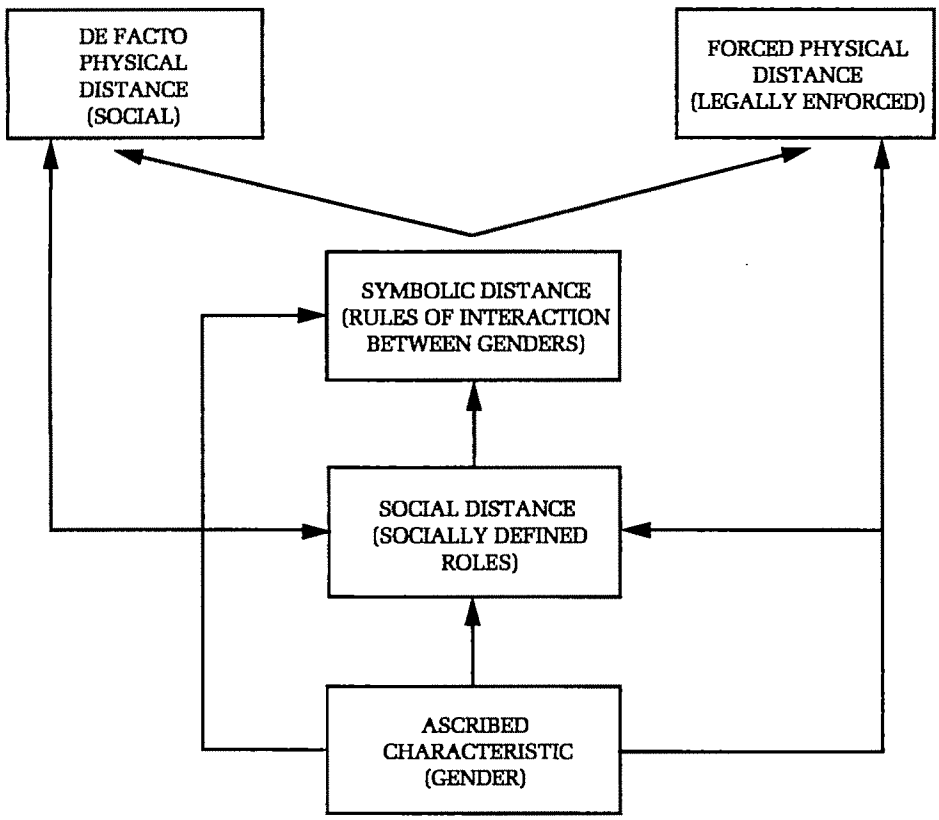
Distance: Social, Symbolic, and Physical

We argue that a refined development of the concept of social segregation can contribute to understanding gender segregation in the workplace. The structuring of social life affects whom one knows (Fischer & Oliker, 1982; McPherson & Smith-Lovin, 1987), and whom one knows often affects the outcomes of job search (Granovetter, 1974). In the following section, we briefly offer a multidimensional model of social segregation that can contribute to understanding the creation of same-gender contacts and the persistence of gender inequality in the workforce. Figure 1 depicts our model.

We view social segregation as the interplay between three distinct dimensions. *Social distance* results from the social expectations and responsibilities attributed to different gender roles. *Symbolic distance* refers to the delimitation of conduct in terms of appropriateness for cross-gender interactions; words, voice, body language, and facial expressions are all aspects of such conduct. *Physical distance* refers to spatial separation of individuals on the basis of gender or other ascribed characteristics.

Gender is a crucial demographic base of affiliation because it interacts with other social characteristics (Ely, 1994, 1995). Social distance results from women's and men's different expectations for marriage and family roles, including career interruptions for child or elder care and spouse relocation. Inside and outside the workplace, a persistent gender-segregated division of labor continues to exist, and certain jobs are still viewed by applicants and recruiters as more appropriate for men or for women. Symbolic distance constrains cross-gender contacts between otherwise similar people. Stereotyped beliefs about gender-specific traits and social perceptions of common understanding produce gender-segregated networks. Although the courts continue to eliminate the remnants of forced physical segregation in education and other institutions (e.g., fraternal organizations and social clubs), social and symbolic distance contribute to de facto spatial separation between the sexes (cf. McPherson & Smith-Lovin, 1987; Perry et al.).

FIGURE 1
The Distance Model of Social Segregation



The uncoupling of social segregation into three types of distance can contribute to academic understanding of gender segregation and the underrepresentation of women in the most powerful positions in organizations. Men and women may both seek and find employment through informal networks, but the information received is the accumulation of present and past strategic actions that are based on gender expectations (Perry et al., 1994). Although a man and a woman may have the same job title (formal function) and share the same office (physical space), symbolic distance alone can contribute to network "homophily" and different opportunity structures for men and women.

In the rest of our presentation, we develop some preliminary hypotheses relating social, symbolic, and physical distance to the perpetuation of gender segregation through job-finding contacts. We argue that one social pressure that perpetuates gender segregation in the workplace is the type of jobs available through same-gender and cross-gender networks. Social and symbolic distance are so integral to gender roles that norms operating in job

search activity perpetuate gender segregation in the workplace. We argue that the genders of job contacts and job seekers combine to affect segregation in the workplace net of other salient characteristics of jobs that are known to vary by gender (cf. Tomaskovic-Devey, 1993).

HYPOTHESES

Some further definitions should precede presentation of our analysis. *Informal networks* involve discretionary interactions whose content can be work-related, social, or both. *Formal networks* are sets of formally prescribed relationships between superiors and subordinates or other functionally defined groups that exist for the purpose of accomplishing some organizational task (cf. Ibarra, 1993). We limited our analysis here to job seekers who reported the use of informal referrals to jobs from friends, relatives, and business associates. We were especially interested in the referral activities of current employees of the organization studied since these were within the purview of organizational control and constituted most of the informal referrals in our sample (see below). In our analysis, we examined the relationship between informal same-gender and cross-gender contacts, placement in the organizational hierarchy, and placement in gender-typical jobs net of controls associated with gender inequality in the workplace.

We argue that social, symbolic, and physical proximity to same-sex others increases the chance of network ties to same-sex others. Separate spheres of activity induce homophily in many organizations (McPherson & Smith-Lovin, 1987). Likewise, sexual tensions, fear of rumor, and gender differences in communication often act to discourage the development of cross-gender affiliations (Noe, 1988; Tsui, Egan, & O'Reilly, 1992). Finally, men and women may choose homophilous social groups because of common interests, experiences, or perceived strategic advantage (Ibarra, 1995).

The relative lack of strong multiplex ties (instrumental and expressive) between men and women should inhibit the amount of successful cross-gender job referral (Ibarra, 1993). Further, the persistence of gender-segregated employment makes it even less likely that an employee will recommend a job candidate of a different gender. These functional, interactional, and physical barriers make it unlikely that cross-gender job referral will happen at all.

> *Hypothesis 1. Same-gender job referrals are more likely to occur than cross-gender job referrals.*

Men's and women's work is still characterized by gender segregation (physical and social) at the job level (cf. Tomaskovic-Devey, 1993). Female employees in such positions as office manager or consumer service representative are most likely aware of the positions that they, recruiters, and seekers define as gender-specific (Perry et al., 1994; Powell, 1987). Higher-level jobs within a female employee's realm of knowledge are often not deemed socially acceptable for men (Reskin & Roos, 1990). Further, if men's

job-finding networks reflect established strategies for managing gender relations, men will avoid placing themselves in positions subordinate to women by referring women to positions inferior to their own (Reskin & Roos, 1990).

> *Hypothesis 2. People are more likely to refer job seekers whose gender differs from their own to positions that are hierarchically lower than those to which they will refer same-gender job seekers.*

Ibarra (1992) suggested that women receive friendship and support from fellow female employees and instrumental (job-related) access to men through network ties. Because the status of network contacts varies systematically by gender, homophily should be negatively associated with the positional power of network ties for women. Groups containing a single identity group will be less likely to produce instrumental benefits, and instrumental groups will be less likely to contain a single identity group (cf. Ibarra, 1995). Prior research also suggests that both genders play an active role in the creation of gendered work cultures (Bradley, 1989), and many women continue to recommend gender-typical positions to other women because these positions affirm established notions of femininity. Gendered work cultures combine with social, symbolic, and physical distance outside the workplace to limit informal knowledge of alternatives to gender-segregated employment opportunities. Women tend to be segregated in positions hierarchically lower than men's, and differences in the structural locations of gender-segregated jobs limit women's knowledge of jobs' availability to positions similar to their own (Ibarra, 1992). This restriction increases the likelihood that same-gender job seekers will wind up in gender-typical jobs and that cross-gender job seekers will not wind up in gender-typical jobs. This also suggests that, because of their structural locations, women will refer job seekers to gender-typical jobs more than men will. These observations suggest two hypotheses:

> *Hypothesis 3. Job informants tend to refer same-gender job seekers to gender-typical jobs more than they refer different-gender job seekers to gender-typical jobs.*

> *Hypothesis 4. Women tend to refer job seekers to gender-typical jobs more than men do.*

METHODS

Setting

The location of the study was the headquarters of one large multistate banking institution, hereafter called BANKNOW. The organization is one of the 50 largest banks in the United States and among the top employers in its headquarters' city. BANKNOW holds a position of leadership in both the management of human resources and profitability (Standard & Poor's, 1987).

BANKNOW provided specific advantages as a setting for examination.

The human resource department was asked to fill an average of 35 job vacancies a week. The bank has over 200 job titles and a wide range of jobs. These numbers made empirical analysis possible.

Importantly, recruitment for BANKNOW was centralized; all employee requisitions went to one human resource department. The department kept detailed records on vacant positions and was responsible for filling positions. Standard information on executive and teller recruitment was available, and we could easily examine hiring at all levels of the organization. Further, banks are a strong location for exploring women's mobility, since banking is an industry in which women made marked progress into management in the 1980s (Karr, 1989).

Research Design

Overview. Our sample included the individuals entering all positions that the human resource department was requested to fill in a four-month period in 1988 (575 positions). Data were collected at various stages in the recruitment process from both the job seekers' and the recruiters' perspective. Data collection proceeded in four steps, three of which provided data for the present analysis. This study primarily focuses on a subsample of external hires ($n = 127$), each of whom reported having been hired through an informal referral from a friend, relative, or business associate who was a current employee of BANKNOW. This subsample was identified at step three. A description of the first three data collection steps follows:

(1) We surveyed the recruiters whom the bank assigned to fill positions. Upon receiving a requisition from a department about an open position, a recruiter would complete a questionnaire concerning salient job characteristics and the intended recruitment strategy. This segment of the survey provided information on the specific job characteristics used as controls in our analysis (see Tables 2 and 4).[2]

(2) A researcher followed the firm's weekly reports on open and closed requisitions until positions were filled. This step provided information on the firm's recorded successful search strategy, the names of the recruits hired to fill specific positions (necessary for step 3), the benefits classification of each position (exempt or nonexempt), whether it was a new or a replacement position, and whether it was full-time or part-time (see the Discussion section).

(3) At orientation, the new external hires received a questionnaire asking for information about their job search behavior. Each was asked to indicate the perceived source of the new job (the job informant). The response

[2] Because of the active cooperation of the recruiters, information on the organization's search strategy and on characteristics of the positions filled is complete for the entire sample (the response rate was 100 percent). After all the positions were filled, a questionnaire was given to each recruiter. The questionnaire measured the recruiter's perceptions of the efficiency of the various recruitment methods investigated during the course of the data collection. This information is not used in the analysis presented here (further details are available from the authors).

rate for new hires at this stage of the data collection was 80 percent. Employees hired internally were excluded from this portion of the data collection because these employees did not attend orientation.

In all, 322 new hires provided usable information on their job informants. Personal referrals from friends, relatives, and business associates constituted the predominant job source (n = 152, 47.2%); newspapers (n = 104, 32.3%), walk-in applications (n = 23, 7.1%), and private employment agency referrals (n = 19, 5.9%) were the next most common sources. The remaining 24 cases were scattered across seven other categories (none accounting for more than 2 percent of the sample), including public employment service referrals, referrals from educational institutions, and responses to various types of job postings. In order to examine relationships between same-gender and cross-gender referrals and the positions in the organizational hierarchy of the job finders and job informants, we limited our analysis to job finders who reported BANKNOW employees as their job informants (N = 127).[3] From the standpoint of understanding gender segregation in the workplace, the mechanism by which potential employees found out about openings and applied for the jobs is crucial to understanding the types of jobs they accepted with BANKNOW.

Assets and liabilities of the BANKNOW study design. Our design has three assets that distinguish our data from prior data on recruitment and selection: (1) information was gathered when employees were hired, (2) we explored the hires', the recruiters', and the firm's accounts of the search dynamic rather than assuming agreement in the perceptions of all players in the recruitment process, and (3) we solicited the gender of the job informant from the job seeker, which allowed us to compare outcomes of same- and cross-gender referrals.

Our design suffers from the liability that the data represent only successful hires. It is entirely possible (and likely) that individuals who did not accept jobs or were not offered jobs had different experiences than those who were offered jobs and those who were recruited through formal network contacts. Further, given our prior discussion of the instrumental and social networks of men and women (Ibarra, 1992, 1993), it is likely that male informants had greater numbers of instrumental contacts overall. Our inferences are limited to those who found jobs through personal network contacts with current employees.

MEASURES

We explored two outcome measures in our analysis of successful informal job searches. First, we created a dichotomous variable, *gender-typical*

[3] Further details about the data collection and the subsample used are available from the authors. There were no significant differences in job characteristics between job seekers who reported that their job informants were BANKNOW employees and those who said their sources were not BANKNOW employees.

job. We used detailed occupational data at the national level (U.S. Bureau of Labor Statistics, 1989: 36:183–188) to classify jobs as male-dominated (more than 70 percent of incumbents in the matching three-digit occupation were men) or as female-dominated (more than 90 percent were women). The 70 percent convention is consistent with cognitive schemata linking gender labels to jobs (Perry et al., 1994) and represents the point at which significant inequalities in job outcomes are produced (Reskin & Roos, 1990). In our sample of successful informal job searchers, respondents were classified as entering gender-typical jobs if they entered a job in an occupation whose dominant gender composition matched their gender; those individuals received a code of 1. Those who entered jobs with more evenly balanced gender composition or jobs dominated by the other gender were coded 0.

We created a second variable, *seeker-informant relative position*, from an item on the questionnaire that external hires received at orientation: "If your source worked for the organization, how does your job compare to the source's job in the organizational hierarchy?" Respondents could choose one of three closed-response alternatives: "lower in the hierarchy" (52%), "about the same" (40%), and "higher in the hierarchy" (7%).

We were interested in whether cross-gender referrals yielded different job placements than same-gender referrals. The genders of both job seekers and informants were provided on the orientation questionnaire. We used two variables in our analysis to distinguish cross-gender networks from same-gender networks. *Informant's gender* was coded 1 for women. *Cross-gender referral* was coded 1 if a female job seeker reported using a male informant or if a male job seeker reported using a female informant. With both variables in our regression analysis, the coefficient for informant's gender refers to the use of female informants by female job seekers. The constant in the regression analysis (which serves as the reference category) refers to the use of male informants by male job seekers. The cross-gender referral variable gets at the unique contribution of cross-gender referral networks net of the gender of the informant or job seeker.

We also controlled for attributes of jobs that have varied by gender in prior research (Tomaskovic-Devey, 1993). These measures will only be discussed briefly. *Asset specificity,* which assessed the degree to which the knowledge needed to perform a task in the firm was not transferrable to another organization (Williamson, 1981), was taken from this item on the recruiters' questionnaire: "Estimate the expected amount of time (formal and informal training) before the new employee will be able to meet performance criteria for this position" (0, immediately, to 8, over a year; $\bar{x} = 3.90$, between two weeks and one month). Jobs tend to be gender-stratified on the basis of asset specificity because employers are traditionally reluctant to invest training time on women, given the widespread perception that women are more likely to quit their jobs (cf. Reskin, 1993). *Skill and experience* needed was a subjective measure taken from the recruiters' responses to the statement "This job requires a high level of skill/experience" (1, strongly disagree, to

5, strongly agree). We expected that the amount of skill and experience necessary to fill a position would be an important consideration in informants' minds as they evaluated the qualifications of job seekers. These evaluations of skill and experience tend to be confounded by gender (cf. Perry et al., 1994).

Monthly pay and *benefits* measured the compensation packages that came with the open positions. Prior research has shown that women end up in positions with fewer benefits and lower pay (cf. Reskin, 1993). Recruiters were asked to estimate the monthly pay of each position being filled ($\bar{x}$ = \$1,352, s.d. = \$835.58). Our measure of benefits was taken from BANKNOW's weekly requisition reports. Benefits were coded as 1 for exempt (or salaried) status and as 0 for nonexempt (or hourly) status; the salaried benefits package was more extensive than the hourly package. These job characteristics may be confounded with the gender of a job seeker and informant.

Finally, we measured whether an obtained job was a *new position* (1) or an old position (0) and whether it was *part-time* (under 40 hours per week = 1) or *full-time* (40 hours a week or more = 0). Both measures were taken from weekly requisition reports. We also measured the ease with which the productivity of employees could be metered or evaluated. The measure of *evaluability* (Williamson, 1981) came from recruiters' responses to the statement "Performance is difficult to evaluate for this position" (1, strongly disagree, to 5, strongly agree). Both variables represented important gender-stratifying aspects of jobs identified in prior research (cf. Perry et al., 1994; Reskin, 1993). New positions are less likely to be typed by gender (Perry et al., 1994). Part-time jobs are more likely to be filled by women who wish to balance work with domestic responsibilities (cf. Gerson, 1985). The ability of supervisors to evaluate job performance easily affects the types of people selected to fill jobs, and similar others are preferred when job evaluability is low (cf. Reskin, 1993).

In addition to these controls, our analysis included several covariates that could affect the relationship between the attributes of jobs possessed by informants and job seekers. Specifically, we controlled for job seekers' locations in positions at the bottom of BANKNOW's organizational hierarchy. *Tellers* occupy traditional entry-level jobs in banks. Job seekers who accepted positions as tellers were coded 1. We also controlled for the *rank of the found job* in BANKNOW's organization chart, as reported by the recruiter. Ranks range from 1 to 30, with a mean of 7.70.

In addition, we controlled for several family roles associated with the evaluation of employees (Lobel & St. Clair, 1992) and with gender roles that create social distance and work-family conflicts (Gerson, 1985). Our measurements took into account the fact that the effects of family roles tend to be cumulative (cf. Loscocco & Leicht, 1993) and potential gender-specific effects (cf. Witkowski & Leicht, 1995). We included job finders' *marital status* (currently married = 1, else = 0), *parental status* (one or more dependent children = 1, else = 0) and status as a *married parent*, a *married woman*, a

mother, or a *married mother.*[4] In addition to being salient components of social distance between men and women, these roles are critical components of most statistical discrimination scenarios (Reskin, 1993). We incorporated each of these controls into the loglinear analysis to test whether the relationships between job informants, job seekers, and jobs were sensitive to the hierarchical locations of the positions at BANKNOW.[5]

RESULTS

How Frequent are Same- and Cross-Gender Referrals?

Both men and women were more likely to have same-gender information sources than cross-gender information sources, supporting Hypothesis 1. Thirty-five percent of the male job seekers and 25 percent of the female job seekers reported informants of the opposite gender as their job-finding contacts ($t = 1.32$, n.s.). Women were more likely to end up in gender-typical jobs in BANKNOW (70.1 percent, compared to 28 percent of men, $t = 5.30$, $p = .001$). There was no systematic variation by gender in the relationship between the positions of informants and the positions job seekers accepted ($\chi^2 = .09$, 2 *df,* n.s.). This latter result is important because it suggests some commonality in the job referral process for men and women, with most job seekers ending up in positions lower in the organizational hierarchy than their informants' positions.

Are Same- and Cross-Gender Networks Associated with Jobs in Different Organizational Locations?

We were interested in whether the gender of a job seeker's contact was associated with the relationship between the hierarchical positions of the seeker's and the informant's jobs (Ibarra, 1993, 1995; Reskin & Ross, 1990). Our descriptive results suggested that both men and women were frequently told of positions lower than those of their informants and rarely told of positions above the informants' positions. However, the disaggregation of this relationship in Table 1 suggests a different dynamic.

Table 1 presents the results of a loglinear analysis of the relationships among job seekers' and informants' relative hierarchical positions (P), informant's gender (I), and cross-gender referrals (C). The general loglinear model for the three-dimensional contingency table is:

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[4] In the "loglinear" analysis, we did not have the degrees of freedom to control for the cumulative lower-order interactions and thus isolate the distinctive contributions of different combinations of gender of job seeker, marital status, and children. In the "logit" analysis, we did this by (for example) including all two-way interactions between gender, marital status, and children before adding the married-mother variable to our models.

[5] In addition to the analyses presented here, we examined relationships between our job contact variables and the job characteristics we used as controls in the analysis (results are available from the authors). These results provide some support for the notion that same-gender job-finding networks (and especially women's job-finding networks) tend to perpetuate gender inequality in job characteristics.

TABLE 1
Results of Loglinear Analysis Testing Hypothesis[a]

	Model[b]						
Control Variable	**1: (*P*) (*I*)**	**2: (*P*) (*I*) (*C*)**	**$\Delta\chi^2$ (2 vs. 1)**	**3: (*PC*) (*I*)**	**$\Delta\chi^2$ (3 vs. 2)**	**4: (*PI*) (*PC*) (*IC*)[c]**	**$\Delta\chi^2$ (4 vs. 3)**
No covariates	55.3** (5)	23.4** (4)	31.9** (1)	12.0** (3)	11.4** (1)	6.1* (1)	6.9** (2)
Monthly pay	31.8** (4)	12.0* (3)	19.8** (1)	4.6 (2)	7.4** (1)		
Teller job[d]	24.1** (4)	15.7** (3)	8.4** (1)	11.7** (2)	4.0* (1)		
Rank of found job	21.4** (4)	11.2* (3)	10.2** (1)	0.23 (2)	11.0** (1)		
Married	19.4** (4)	16.7** (3)	2.7* (1)	11.3** (2)	5.4** (1)		
Parent	51.3** (4)	23.3** (3)	28.0** (1)	11.9** (2)	11.4** (1)		
Married parent	39.9** (4)	23.4** (3)	16.5** (1)	11.6** (2)	11.8** (1)		
Married woman	35.8** (4)	18.2** (3)	17.6** (1)	10.3** (2)	7.9** (1)		
Mother	42.0** (4)	22.2** (3)	19.8** (1)	11.3** (2)	10.9** (1)		
Married mother	39.6** (4)	21.9** (3)	17.7** (1)	11.2** (2)	10.7** (1)		

[a] Controls are entered into the models as covariates. Model statistics are chi-squares with degrees of freedom in parentheses.

[b] P = position in organizational hierarchy, I = gender of job informant, and C = cross-gender referral.

[c] Where no values are shown, the model is saturated.

[d] The teller job, the lowest-paid job at BANKNOW, is at the bottom of its organizational hierarchy.

* $p \leq .05$

** $p \leq .01$

$$\log m_{pic} = u + u_p + u_i + u_c + u_{pi} + u_{pc} + u_{ic} + u_{pic}\,. \quad (1)$$

where $\log m_{pic}$ is the natural logarithm of the expected values of the cells of the table, u is the grand mean of the logarithms of the expected counts, and the remaining terms express deviations from this grand mean (Fienberg, 1983). We use loglinear models to describe structural relationships among variables corresponding to the dimensions of the contingency table as defined by our three measures (Fienberg, 1983). The models are nested, and model fits are expressed in terms of chi-square statistics. Improvements in model fit are expressed as significant reductions in chi-square statistics as successive terms are added, with degrees of freedom equal to the difference in degrees of freedom between two models (Fienberg, 1983; Knoke & Burke, 1980).

In testing Hypothesis 2, we used the following nested models:

$$(P)(I)\ \log m_{pic} = u + u_p + u_i\,, \quad (2)$$

$$(P)(I)(C)\ \log m_{pic} = u + u_p + u_i + u_c\,, \quad (3)$$

$$(PC)(I)\ \log m_{pic} = u + u_p + u_i + u_c + u_{pc}\,, \quad (4)$$

and

$$(PI)(PC)(IC)\ \log m_{pic} = u + u_p + u_i + u_c + u_{pi} + u_{pc} + u_{ic}\,. \quad (5)$$

Equation 2, the model of independence, compares a job seeker's position in the organizational hierarchy to that of the informant (P) and the gender of the informant (I). Equation 3 adds the cross-gender referral term to the analysis (C). A comparison of the difference in the chi-squares of Equations 2 and 3 assesses the contribution of cross-gender referral to explaining the job seeker's and the informant's relative positions. Equation 4 adds an interaction between job seeker's position in the hierarchy (P) and cross-gender referral (C). Again, the difference in the chi-squares of this model and Equation 3 assesses the significance of the relationship between job seeker's position and cross-gender referral. Equation 5 adds all two-way interactions between job seeker's position, informant's gender, and cross-gender referral. The difference in the chi-squares of this model and Equation 4 assesses the contribution of interactions with cross-gender referral and informant's gender to explaining the job seeker's relative hierarchical position. Hypothesis 2 is supported if Equation 4 is a better fit than Equation 3. Further support for Hypothesis 2 results if Equation 5 significantly improves model fit over Equation 4. This result would suggest that there are significant relationships between an informant's gender and a job seeker's position in the organizational hierarchy as well as between cross-gender referral and a job seeker's hierarchical position.

The results shown in the remaining rows of Table 1 add single covariates as controls to the loglinear models. These variables control for characteristics of a job seeker's job that affect whether he or she was referred to a job above or below that of the informant. The variable for the teller position

(16 percent of our subsample, and the most frequently filled job title at BANKNOW) controls for the lowest rung of this organization's hierarchy. Seeker-informant relative position controls for differences in the relative likelihood of referrals from above and below a job finder (i.e., referrals from below are less likely as one moves down the hierarchy, and referrals from above are less likely as one moves up the hierarchy). Controls for mean monthly pay get at a separate dimension of organizational hierarchy that varies by position and is also a salient dimension of gender inequality in most organizations (including BANKNOW; results are available from the authors). Variables for family-related social roles control for salient characteristics of family roles that have been shown to affect job and career outcomes in prior research (Gerson, 1985; Kalleberg & Leicht, 1991; Lobel & St. Clair, 1992; Witkowski & Leicht, 1995). The covariates are entered in separate equations, and each uses one degree of freedom in the loglinear models.

In each model, regardless of the controls used, the addition of the cross-gender referral variable (model 2) produces a significant improvement in model fit. Adding the interaction of seeker-informant relative position and cross-gender contact (model 3) improves the fit still further. These results all support our hypothesis that cross-gender referrals are associated with positions lower in the organizational hierarchy (Hypothesis 2). Finally, the addition of all two-way interactions (model 4) produces the best model fit ($\chi^2 = 6.1$, $df = 1$). Further support for Hypothesis 2 emerges, as interactions between cross-gender referral, informants' gender, and seeker-informant relative position all improve the explanation of the relationship between these three variables.[6]

The loglinear analysis establishes that the interaction between cross-gender referral and seeker-informant relative position improves the modeling of the relationship between informant's gender, relative position, and cross-gender referral. Table 2 shows results of a logistic regression analysis through which we explored these relationships further. Informant and job seeker gender were used to statistically predict the position of a seeker's job in the organizational hierarchy relative to the position of his or her informant. This analysis allowed us to control simultaneously for other salient characteristics that are associated with gender stratification in the workplace (see footnote 4).

The results in Table 2 clearly support Hypothesis 2. Cross-gender referrals are 4.7 times more likely to be to positions lower in the organizational hierarchy than the informants' ($e^{1.55} = 4.7$). This relationship persists regardless of the controls used in the model, including the rank of the found job. Further, female job informants refer female job seekers to positions at the *same* or a *higher* hierarchical level as their own positions, and men refer

[6] In addition to the covariates presented in all our tables, we also substituted covariates measuring the effects of the individual recruiters, with a variable indexing each recruiter entered into separate models. The addition of these covariates failed to change the results presented in our analysis.

TABLE 2
Results of Logistic Regression Analyses for Seeker-Informant Relative Hierarchical Position[a]

	Dependent Variable: Seeker-Informant Relative Position	
Independent Variable	**Model 1**	**Model 2**
Informant's gender	−0.50	−0.73†
	(0.35)	(0.43)
Cross-gender referral	0.88†	1.55*
	(0.38)	(0.09)
Seeker-informant relative position		−0.15†
		(0.07)
New position		0.57
		(0.55)
Benefits		2.17†
		(1.18)
Part-time		−0.23
		(0.46)
Monthly pay		−0.01
		(0.01)
Asset specificity		−0.22
		(0.25)
Skill and experience needed		0.20
		(0.26)
Evaluability		0.14
		(0.35)
Constant	−0.41	6.34
	(0.28)	(4.99)
Log likelihood	−95.2	−69.3
Chi-square	7.8*	26.0*
Significance	.020	.003

[a] Logit coefficients are shown, with standard errors in parentheses.
† $p \leq .10$, two-tailed test
* $p \leq .05$, two-tailed test

male job seekers to positions *lower* than their own positions, regardless of other job characteristics or of the rank of the jobs seekers find in BANKNOW. Cross-gender referrals tend to be to positions hierarchically lower than those of the job informants. Results in Table 2 were unchanged when we controlled for teller positions and family roles (results are available from the authors).

Are Same-Gender Referrals Associated with Gender-Typical Jobs?

Hypotheses 3 and 4 suggest that same-gender job referrals will be associated with gender-typical job placements and that women are especially likely to refer other women to gender-typical jobs. To test these hypotheses, we used a series of nested loglinear models to examine the relationship between location in a gender-typical job (*P*, a job that is 70 percent or more

female for women and 70 percent or more male for men), gender of the informant (I), and cross-gender referral (C):

$$(P)(I)\ \log m_{pic} = u + u_p + u_i, \tag{6}$$

$$(P)(I)(C)\ \log m_{pic} = u + u_p + u_i + u_c, \tag{7}$$

$$(PI)(I)\ \log m_{pic} = u + u_p + u_i + u_c + u_{pi}, \tag{8}$$

and

$$(PC)(C)\ \log m_{pic} = u + u_p + u_i + u_c + u_{pc}. \tag{9}$$

In this case, we analyzed the interaction between informant's gender and gender-typical job location controlling for cross-gender referral (Equation 8) and analyzed the interaction between cross-gender referral and gender-typical job location controlling for informant's gender (Equation 9). If Equation 8 produces a significant improvement in model fit over Equation 7, then informant's gender significantly interacts with gender-typical job placement to explain the relationships between the variables (supporting Hypothesis 4). If Equation 9 produces a significant improvement in model fit over Equation 7, then cross-gender referral is also associated with gender-typical jobs net of the effects of informant's gender and gender-typical jobs (supporting Hypothesis 3).

In each model, regardless of the controls used, the addition of the cross-gender referral variable produced a significant improvement in model fit (column 3, Table 3). Adding the interaction of position and gender of the informant improves the fit still further (column 5, Table 3). All of these results support the hypothesis that women tend to refer job seekers to gender-typical jobs more than men do (Hypothesis 4). However, the interaction between cross-gender referral and gender-typical job does not improve on the fit of the independence model (column 7, Table 3), except in models with marital status and married parent as covariates. We have no ready explanation for this result as we expected our covariates to reduce the likely significance of the variables for same-gender and cross-gender informant. Marriage and parenthood among job seekers seems to make cross-gender informants a significant factor associated with gender-typical job placement. This result supports prior work suggesting that parental role salience is a critical factor in evaluations of men and women both when they seek work and after they are employed (Lobel & St. Clair, 1992). However, these latter results do not support Hypothesis 3. Further additions of all two-way interactions between informant's gender, cross-gender referral, and gender-typical job do little to explain the relationships between the variables (difference with model 3 in Table 3, $\chi^2 = 1.1$, 1 *df*, n.s.).

Table 4 presents results of a logit analysis of the relationship between gender-typical job, informant's gender, and cross-gender referral sheds further light on this complex relationship.

Female informants were 2.7 times more likely to refer job seekers to gender-typical jobs than were male informants, supporting Hypothesis 4 ($e^{1.0}$

TABLE 3
Results of Loglinear Analysis Testing Hypotheses 3 and 4[a]

Control Variable	Model[b] 1: (*P*) (*I*)	2: (*P*) (*I*) (*C*)	$\Delta\chi^2$ (2 vs. 1)	3: (*PI*) (*C*)	$\Delta\chi^2$ (3 vs. 2)	4: (*PC*) (*I*)	$\Delta\chi^2$ (4 vs. 2)
No covariates	57.2** (5)	24.8** (4)	32.4** (1)	15.1** (3)	9.7** (1)	23.8** (3)	1.0 (1)
Monthly pay	47.4** (4)	24.5* (3)	22.9** (1)	14.3** (2)	10.2** (1)	22.2** (2)	2.3 (1)
Teller's job[c]	24.7** (4)	7.4** (3)	17.3** (1)	2.8 (2)	4.6** (1)	6.3* (2)	1.1 (1)
Rank of found job	42.2** (4)	17.1** (3)	25.1** (1)	10.9** (2)	6.2** (1)	17.0** (2)	0.1 (1)
Married	56.1** (4)	19.3** (3)	36.8** (1)	10.4** (2)	8.9** (1)	10.1** (2)	9.2** (1)
Parent	52.1** (4)	22.4** (3)	29.7** (1)	11.5** (2)	10.9** (1)	21.0** (2)	1.4 (1)
Married parent	51.5** (4)	13.2** (3)	38.3** (1)	4.8* (2)	8.4** (1)	9.6** (2)	3.6* (1)
Married woman	54.8** (4)	23.9** (3)	30.9** (1)	14.1** (2)	10.4** (1)	22.9** (2)	1.0 (1)
Mother	55.3** (4)	24.5** (3)	30.8** (1)	14.1** (2)	10.4** (1)	23.3** (2)	1.2 (1)
Married mother	56.6** (4)	24.6** (3)	32.0** (1)	14.9** (2)	9.7** (1)	23.7** (2)	0.9 (1)

[a] Controls are entered into the models as covariates. Chi-squares are shown, with degrees of freedom in parentheses.

[b] *P* = location in a gender typical job, *I* = gender of job informant, and *C* = cross-gender referral.

[c] The teller job, the lowest-paid job at BANKNOW, is at the bottom of its organizational hierarchy.

* $p \leq .05$

** $p \leq .01$

TABLE 4
Results of Logistic Regression Analyses for Gender-Typical Jobs[a]

	Gender-Typical Job	
Independent Variable	**Model 1**	**Model 2**
Informant's gender	1.0*	1.0*
	(0.34)	(0.43)
Cross-gender referral	−0.34	0.65
	(0.39)	(0.49)
Seeker-informant relative position		−0.01
		(0.06)
New position		0.53
		(0.56)
Benefits		1.92
		(1.26)
Part-time		−0.22
		(0.45)
Monthly pay		0.01
		(0.01)
Asset specificity		−0.20
		(0.24)
Skill and experience needed		−0.44†
		(0.24)
Evaluability		0.28
		(0.33)
Constant	−0.64*	−4.8
	(0.39)	(4.2)
Log likelihood	−97.0	−71.1
Chi-square	10.4*	29.2*
Significance	.005	.001

[a] Gender-typical jobs were defined as those in which 70 percent or more of the incumbents were of the same gender as the relevant respondent.

Logit coefficients are shown, with standard errors in parentheses.

† $p \leq .10$, two-tailed test

* $p \leq .05$, two-tailed test

= 2.7). The cross-gender referral variable is not significant. Further, the cross-gender referral variable fails to reach significance when marital and parental status are added to Equation 2 (results are not shown but are available from the authors). Apparently the relationship between cross-gender referral and gender-typical job is accounted for by the job characteristics we controlled for in the logit models. Hence, the big difference is between male and female informants—men are referring fewer job seekers to gender-typical jobs than women are, a result supporting Hypothesis 4. The nonsignificant result for cross-gender referral fails to support Hypothesis 3. In the simple model (model 1), the sign of the cross-gender referral variable is in the hypothesized direction, but the coefficient does not reach significance.

CONCLUSION

Our results support three of our four hypotheses regarding the relationships between sources of job information (job informants), job seekers using informal job-finding contacts, and the positions job seekers accept: (1) Informal job finders report using same-gender informants more than cross-gender informants. (2) Job seekers whose genders differ from their informants' end up in hierarchically lower positions than their informants. And (3) women refer female job seekers to gender-typical jobs more than men do.

Taken together, our results support two major conclusions about informal job-finding contacts. First, the gender of a job informant is associated with the type of job a job seeker accepts. The significant results for job informants are net of a series of salient controls for job characteristics and salient roles associated with gender that have formed the basis of social distance and statistical discrimination arguments surrounding gender inequality in the workplace (Ibarra, 1993; Reskin, 1993; Reskin & Roos, 1990). Second, it appears that cross-gender referrals are associated with hierarchically lower jobs than are same-gender referrals. Regardless of the gender of the informant or the job seeker, those finding work through cross-gender contacts end up with lower-ranking jobs than their informants.

Third, our results support prior research (Ely, 1995; Lobel & St Clair, 1992; Noe, 1988; Perry et al., 1994; Powell, 1987) indicating that both genders actively perpetuate gendered work cultures. Although female informants at BANKNOW seemed to be indifferent to rank in their referral patterns for potential new hires, they told female job seekers about gender-typical jobs. Given the prevalence of referral as the source of information for new hires, these results point to the need to take the characteristics of job informants as reported by job searchers into account as an important variable affecting new placements with employers. If these sources of information are not accounted for, they could frustrate the best intentions of employers attempting to diversify their firms and management positions.

In terms of our original hypotheses, the existing literature, and future research, a most intriguing finding is that female informants display an indifference to rank in recommending female job seekers, while cross-gender referrals are associated with positions lower in the hierarchy than informants'. One plausible explanation combines our discussion of the concepts of physical and social distance with intraorganizational variation in the network structures of men and women.

Gender segregation in jobs and workplace networks is still widespread. Female employees in such areas as office management or consumer service may only be aware of positions that they, recruiters, and job seekers would define as gender-specific (Perry et al., 1994; Powell, 1987). Quite simply, the higher-level jobs typically within a female employee's realm of knowledge and influence are often not deemed socially acceptable for men. Women's internal networks may actually hinder both women's awareness of jobs that

are above the "glass ceiling" (Morrison & Von Glinow, 1990) and their ability to influence selection for such jobs. For example, Ibarra (1992) found that women's intraorganizational network structures hindered their entry into the typically male-dominated decision-making coalitions in organizations. We suggest that women's gender-segregated career ladders and network structures are in part continually reproduced because of lingering norms of social distance that separate the sexes (Ely, 1994, 1995; Noe, 1988; Perry et al., 1994).

From a practical standpoint, our results support those who would advocate the use of women's networks to increase the diversity of job applicants and new hires. But the critical missing link seems to be information about positions that men traditionally occupy. If our results reflect the typical knowledge available about jobs, women may simply be placing other women onto career paths with limited potential. An essential prerequisite may be the implementation of human resource practices to assure that women are placed in key line jobs (see Morrison and Von Glinow [1990] for a discussion). Likewise, proactive attempts to promote diversified work groups may be the best way to counteract norms of social distance (Ibarra, 1995; Noe, 1988; Powell, 1987). Our results suggest that the gender composition of informal job-finding-networks is an additional feature of such networks that organizations should monitor as they attempt to diversify the workplace and (especially) upper-level management.

Our results are obviously limited by the focus on one firm, the crudeness of our measures of organizational position, and our focus on those who had successfully found jobs. We hope that this research sparks greater interest in the study of gendered networks and job finding as a means of gaining insights into the difficult problem of gender inequality in organizations.

REFERENCES

Blum, T. C., Fields, D. L., & Goodman, J. S. 1994. Organization-level determinants of women in management. ***Academy of Management Journal,*** 37: 241–268.

Bradley, H. 1989. ***Men's work, women's work: A sociological history.*** Cambridge, U.K.: Polity.

Ely, R. J. 1994. Organizational demographics and the dynamics of relationships among professional women. ***Administrative Science Quarterly,*** 39: 203–238.

Ely, R. J. 1995. The power in demography: Women's social constructions of gender identity at work. ***Academy of Management Journal,*** 38: 589–634.

Fienburg, S. E. 1983. ***The analysis of cross-classified categorical data.*** Cambridge, MA: MIT Press.

Fischer, C., & Oliker, S. 1983. A research note on friendship, gender, and the life cycle. ***Social Forces,*** 62: 124–132.

Gerson, K. 1985. ***Hard choices: How women decide about work, career, and motherhood.*** Berkeley, CA: University of California Press.

Granovetter, M. S. 1974. ***Getting a job: A study of contacts and careers.*** Cambridge, MA: Harvard University Press.

Ibarra, H. 1992. Homophily and differential returns: Sex differences in network structure and access in an advertising firm. ***Administrative Science Quarterly,*** 37: 422–447.

Ibarra, H. 1993. Personal networks of women and minorities in management: A conceptual framework. ***Academy of Management Review,*** 18: 56–87.

Ibarra, H. 1995. Race, opportunity, and diversity of social circles in managerial networks. ***Academy of Management Journal,*** 38: 673–703.

Kalleberg, A. L., & Leicht, K. T. 1991. Gender and organizational performance: Determinants of small business survival and success. ***Academy of Management Journal,*** 34: 136–161.

Knoke, D., & Burke, P. 1980. ***Log-linear models.*** Beverly Hills, CA: Sage.

Lobel, S. A., & St. Clair, L. 1992. Effects of family responsibilities, gender, and career identity salience on performance outcomes. ***Academy of Management Journal,*** 35: 1057–1069.

Loscocco, K., & Leicht, K. T. 1993. Gender, work-family linkages, and economic success among small business owners. ***Journal of Marriage and the Family,*** 55: 875–887.

Marsden, P. V., & Campbell, K. E. 1990. Recruitment and selection processes: The organizational side of job search. In R. Brieger (Ed.), ***Social mobility and social structure:*** 59–79. New York: Cambridge University Press.

McPherson, L. M., & Smith-Lovin, L. S. 1987. Homophily in voluntary organizations: Status distance and the composition of face-to-face groups. ***American Sociological Review,*** 52: 370–379.

Moore, G. 1990. Structural determinants of men's and women's personal networks. ***American Sociological Review,*** 55: 726–735.

Morrison, A. M., & Von Glinow, M. A. 1990. Women and minorities in management. ***American Psychologist,*** 45: 200–208.

Noe, R. A. 1988. Women and mentoring: A research agenda. ***Academy of Management Review,*** 13: 65–78.

Perry, E. L., Davis-Blake, A., & Kulik, C. 1994. Explaining gender-based selection decisions: A synthesis of contextual and cognitive approaches. ***Academy of Management Review,*** 19: 786–820.

Powell, G. N. 1987. The effects of sex and gender on recruitment. ***Academy of Management Review,*** 12: 731–743.

Reskin, B. 1993. Sex segregation in the workplace. In J. Blake & J. Hagen (Eds.), ***Annual review of sociology,*** vol. 19: 241–270. Palo Alto, CA: Annual Reviews.

Reskin, B., & Roos, P. 1990. ***Job queues, gender queues: Explaining women's inroads into male occupations.*** Philadelphia: Temple University Press.

Standard & Poor's. 1987. ***Industrial survey.*** New York: Standard & Poor's.

Tomaskovic-Devey, D. 1993. ***Gender and racial inequality at work: The sources and consequences of job segregation.*** Ithaca, NY: ILR Press.

Tsui, A. S., Egan, T. D., & O'Reilly, C. A., III. 1992. Being different: Relational demography and organizational attachment. ***Administrative Science Quarterly,*** 37: 549–579.

U.S. Bureau of Labor Statistics. 1989. ***Employment and earnings.*** Washington, DC: U.S. Government Printing Office.

Williamson, O. 1981. ***Markets and hierarchies.*** New York: Academic Press.

Witkowski, K., & Leicht, K. T. 1995. The effects of gender segregation, labor force participation, and family roles on the earnings of young adult workers. ***Work and Occupations,*** 22: 48–72.

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IMPLICIT THEORIES, SELF-SCHEMAS, AND LEADER-MEMBER EXCHANGE

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This study examined the relation of cognitive factors (implicit theories, self-schemas, and perceived similarity) to liking and leader-member exchange (LMX) in a field setting. Perceived similarity significantly predicted LMX quality, with liking mediating this relationship. Supervisor-subordinate match on implicit performance theories, the normativeness of both subordinates' and supervisors' self-schemas, and subordinates' negative affectivity also predicted liking and LMX ratings. The theoretical and practical implications of these findings are discussed.

Leader-member exchange (LMX) theory emphasizes the differing relationships that supervisors develop with subordinates within a work unit (Dansereau, Graen, & Haga, 1975; Graen & Scandura, 1987). LMX research has involved areas such as performance appraisal (Liden, Wayne, & Stilwell, 1993; Wayne & Ferris, 1990), worker productivity (Scandura & Graen, 1984), organizational climate (Kozlowski & Doherty, 1989), demographic similarity (Liden et al., 1993), perceived similarity (Liden et al., 1993), and attitudinal similarity (Turban, Jones, & Rozelle, 1990). The widespread application of LMX theory is evidence that it is a useful tool for understanding the dynamics of dyadic functioning in organizational settings.

The focus of the present study was on obtaining a more precise understanding of cognitive correlates of LMX. We developed and used a framework to study the role of cognitive similarities between supervisors and subordinates and the effects of those similarities on liking and the reported quality of leader-member-exchange relations. We examined similarity in a variety of domains—implicit leadership theories, implicit performance theo-

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ries, and perceived attitudes—looking at both the effects of congruence and the mediational role of liking in understanding LMX.

Understanding the leader-member-exchange relationship is important for a number of practical reasons. First, the quality of exchange relationships can impact many of a subordinate's job-related outcomes. For example, LMX has been found to be positively related to performance evaluations (Turban et al., 1990; Wayne & Ferris, 1990), role clarity (Blau, 1988), and job satisfaction (Wayne & Ferris, 1990). LMX has also been shown to be negatively related to turnover (Graen, Liden, & Hoel, 1982). Second, expectations on the part of either a leader or member can lead to self-fulfilling prophecies (Eden, 1990; Turban et al., 1990; Liden et al., 1993). Self-fulfilling prophecies may at times work to an individual's advantage (i.e., when an evaluation is positive and the expectations are high), but they can also harm a dyadic relationship. Clarification of the mechanisms underlying leader-member relationships may help to minimize the occurrence of detrimental self-fulfilling prophecies in exchange relationships. Finally, research of this nature may provide information essential for designing effective interventions that can improve leader-member relations. Indeed, there is already evidence that interventions based on LMX theory can produce positive effects (Scandura & Graen, 1984). The results of the present study may allow for the fine-tuning of LMX-based interventions.

In the following sections we review prior research relevant to three factors that may influence LMX: liking, perceived similarity, and implicit theories. We also consider the moderating effects of self-schemas on some of these processes. We then report results from a field study testing predictions based on the theoretical framework we develop.

PROPOSED CORRELATES OF LMX

The Roles of Liking and Similarity in the Exchange Relationship

Although early research emphasized differentiation of employees into those in high- and low-quality leader-member exchange relationships (Dansereau et al., 1975), more recent research has focused on the role of mature partnerships in effective leadership processes (Graen & Uhl-Bien, 1995) and has extensively investigated the role of liking in dyadic relations (Dienesch & Liden, 1986; Liden et al., 1993; Turban et al., 1990; Wayne & Ferris, 1990). Dienesch and Liden (1986) argued that liking is actually a component of LMX, which they posited is a multidimensional construct. Conversely, Graen and Uhl-Bien (1995) noted that LMX has consistently been found to be unidimensional. Accordingly, several researchers have examined liking as an *antecedent* of LMX. Wayne and Ferris (1990) showed that liking was a strong determinant of LMX quality in both a laboratory and a field setting. In addition, Liden and colleagues (1993) found that early liking was even more influential than perceptions of performance in determining the leader's view of an LMX relationship. Taking a slightly different viewpoint, Turban and colleagues (1990) found that a supervisor's liking of

a subordinate did more than just guide performance ratings; it also influenced expectations and subsequent exchanges with the subordinate. In view of this work, we hypothesized the following:

> *Hypothesis 1a. Liking will be positively related to the quality of leader-member exchange as assessed by supervisors.*
>
> *Hypothesis 1b. Liking will be positively related to the quality of leader-member exchange as assessed by subordinates.*

One variable that consistently impacts on liking is perceived similarity (e.g., Byrne, 1971). Further, the similarity attraction paradigm has been successfully shown to generalize to attitudes (Byrne, Clore, & Smeaton, 1986). In the past, researchers have conceptualized and measured similarity in a number of different ways. For example Liden and colleagues (1993) showed that both leaders' and members' perceptions of value similarity and perceived similarity in problem solving together significantly predicted leader-member-exchange quality. Turban and coauthors (1990) operationally defined similarity as perceived similarity in attitudes regarding several different social issues. Individuals who were perceived as being attitudinally similar to a rater received more favorable evaluations than those who were not thus perceived. Other researchers, such as Pulakos and Wexley (1983) and Turban and Jones (1988), have assessed similarity using only a few broadly worded items. These studies have all indicated that similarity is related to liking in supervisor-subordinate relations, but their varied operational definitions make comparisons across studies problematic. This study improves on previous research by using a more comprehensive, ten-item measure of perceived attitudinal similarity (PAS) to test the following hypotheses:

> *Hypothesis 2a. Perceived attitudinal similarity between supervisors and subordinates will be positively related to liking as assessed by both supervisors and subordinates.*
>
> *Hypothesis 2b. Liking will mediate the relationship between perceived attitudinal similarity and LMX quality, as assessed by both supervisors and subordinates.*

The Role of Implicit Theories in the Exchange Relationship

When processing capacities are taxed (Maher, 1995), relationships are familiar (Smith, 1994), or accurate retrieval of social information is not a current goal (Chartrand & Bargh, 1996), perceivers will often use relatively automatic categorization processes as a basis for social interactions (Lord & Maher, 1991). In fact, Smith (1994) stressed that such automatic processes are generally the "default value" in social perceptions, with more systematic processing only occurring when spare capacity exists and perceivers are highly motivated to be accurate. This reasoning implies that many aspects of

dyadic relations will be based on the automatic use of implicit theories as a basis for categorizing one's dyadic partner. Once categorized, dyad members can rely on "on-line" rather than memory-based processes. That is, dyad members are likely to rely on their general impressions rather than on the memory of specific behaviors in making judgments about and reacting to the other dyad members.

Since categorization guides subsequent information processing, the initial classification of another person can lay the groundwork for the dyadic relationship that will eventually develop. Though initial classifications can be revised, revision requires free cognitive resources (Gilbert & Osbourne, 1989), which may often be directed at other aspects of work situations (task activities, impression management, role learning, etc.). In addition, attributional biases, such as attributing category-inconsistent behavior or outcomes to situational factors, make recategorization less likely (Hanges, Braverman, & Rentsch, 1991). Such information-processing research implies that, once a perceiver has labeled another individual, it is difficult to change that initial impression. Hence, the nature of an exchange relationship is often based on an initial impression.

The importance of implicit theories in dyadic functioning is also highlighted in Lord and Maher's (1991) reciprocal influence model, in which social perception is conceptualized as a sensemaking process that mediates between the behavior of one dyadic partner and the response of the other. It is the *interpretation* of behavior, not behavior per se, that impacts on leadership relationships (Gioia, Thomas, Clark, & Chittipeddi, 1994). According to the Lord and Maher (1991) model, people use implicit theories as both a basis for interpreting the behavior of their dyad partners and as a foundation for generating their own behavior. Thus, implicit theories provide a degree of stability and predictability to dyadic relations in addition to simplifying the information-processing demands associated with social interactions.

Several factors suggest that agreement between supervisors' and subordinates' implicit theories may be critical determinants of liking and exchange processes. First, congruence in implicit theories may influence perceived similarity and identification with the dyadic partner, a process already discussed. Second, congruence may provide a basis for common understanding. Since schemas guide both behavior and social interpretations of behavior, when congruence exists: (1) the actual behavior of both dyad members is likely to align with expectations and (2) both parties are likely to interpret behavior similarly. Behavioral expectations and interpretations of behavior are critical components of all social processes. Third, congruence permits more automatic, intuitive social interactions, allowing processing resources to be directed toward other tasks and implicitly confirming an individual's definition of reality. In combination, these three processes should produce greater liking and higher-quality LMX where congruence exists.

The operation of such processes can be seen in a more concrete manner if dyadic social interactions, particularly early leader-member exchanges,

are viewed as a learning process. Ohlsson (1996) maintained that learning depends on error detection and correction processes. Ohlsson also argued that error detection depends on a subjective comparison of outcomes to internal standards (e.g., what ought to be). We suggest that the automatic operation of dyad members' implicit theories provides these standards and further, that dyad members respond to disconfirmation of expectancies (error detection) by communicating negative affect (either consciously or unconsciously) and directing attention to detected errors. By such processes, congruence in supervisors' and subordinates' implicit theories should produce dyadic interactions that demand less attention and are subjectively experienced as more affectively positive. If affect is a critical mediator, as we have already suggested, LMX relations would also be affected by such processes.

It is important to realize that congruence in implicit theories can be both a cause and a result of dyadic processes. Cognitive schemas can be viewed as being stable in the short run, so that they provide a causal explanation for moment-to-moment behaviors and interpretations. In the long run, however, schemas can be affected by liking and LMX relationships, with cognitive alignment increasing in dyads with greater contact and greater mutual influence. Cross-sectional data like those provided in our study cannot separate these short- and long-run effects. By indicating the degree of association between implicit theory congruence and both liking and LMX, however, cross-sectional data can suggest whether congruence in implicit theories is likely to be important and worth further research.

It is also important to emphasize that both leaders and members rely on implicit theories to process social information and make social judgments, although the choice of a particular category or schema for evaluating the other member of a dyad may differ for supervisors and subordinates. Because leadership qualities are considered important for (Lord & Maher, 1991; Meindl, 1995) and are expected of effective managers, we propose that subordinates use *implicit leadership theories* to evaluate their supervisors. From a supervisor's perspective, however, a subordinate's performance may be much more important than the subordinate's leadership qualities. Thus, it is likely that supervisors rely on *implicit performance theories* to form impressions of subordinates. According to Lord and Maher (1991), leaders develop prototypes of effective subordinates and then compare subordinates to this prototype. The result of this comparison process is the labeling of subordinates as either effective or ineffective. Subordinates who are aware of and able to exhibit behaviors consistent with a supervisor's implicit performance theories are likely to be evaluated favorably by that supervisor.

Like schema-based processing, affective reactions can occur with minimal cognitive effort. Srull and Wyer (1989) argued that affective reactions are stored as cognitive representations that become an important aspect in the formation of an evaluative concept. Once formed, the evaluative concept guides encoding of behavior in terms of that concept. This line of thinking raises the possibility that much cognitive information, though initially im-

portant in its own right, serves mainly to form an on-line evaluative judgment. In other words, affective reactions may mediate the effects of implicit theories (and also perceived attitudinal similarity) on social judgments. Thus, we predict that

> *Hypothesis 3a. Dyadic congruence in implicit leadership theories will significantly impact of subordinate-rated liking.*
>
> *Hypothesis 3b. Subordinates' liking of supervisors will mediate the relationship between implicit-leadership-theory congruence and subordinate-rated LMX quality.*
>
> *Hypothesis 4a. Dyadic congruence in implicit performance theories will significantly impact supervisor-rated liking.*
>
> *Hypothesis 4b. Supervisors' liking of subordinates will mediate the relationship between implicit-performance-theory congruence and supervisor-rated LMX quality.*

The Role of Self-Schemas in Exchange Relationships

One potential difficulty with the prior reasoning is that implicit leadership or performance theories may not be held or used by everyone in an organization. Thus, it is important to assess the extent to which a particular schema exists and is used by perceivers. Work in the self-schema area can be used for this purpose. Self-schemas, as defined by Markus, Smith, and Moreland are "sets of cognitive structures that provide for individual expertise in particular domains of social behavior" (1985: 1495). Individuals who hold self-schemas with regard to a particular social domain are *schematic,* and those who don't are *aschematic* with regard to that domain. Using Markus and colleagues' framework, we conceptualized individuals as varying in the degree to which organizationally defined implicit leadership theories and implicit performance theories are personally meaningful.

Markus and her colleagues asserted that people often use the same categories in describing others that they use in describing themselves (Catrambone, Beike, & Niedenthal, 1996; Catrambone & Markus, 1987; Fong & Markus, 1982; Markus et al., 1985). Hence, as schematicism increases in a conceptual domain, so does sensitivity to the behavior of others in that domain. Therefore, an individual who has a self-schema for leadership is more likely to describe and interpret the actions of others (namely, his or her supervisor or subordinates) in terms of his or her own implicit leadership theories than would an aschematic individual. Schneider and Blankmeyer (1983) have made similar arguments.

The same reasoning can be extended to support the argument that the effects of congruence in implicit theories should be greater for perceivers who are schematic with respect to an implicit theory. Returning to our learning-based example of congruence effects based on Ohlsson's (1996) theory, schematic individuals would be likely to base expectations on implicit theo-

ries since they are readily available schemas. Consequently, schematic individuals would also be likely to detect expectancy disconfirmation and respond with negative affect. The communication of negative affect is also likely to be more extreme when expectancy violation is in personally meaningful and self-descriptive domains (i.e., domains where one is schematic) than when it occurs in less personally relevant areas. On the basis of this reasoning, we predict

Hypothesis 5a. Schematicism will moderate the effects on liking of congruence in implicit leadership theories.

Hypothesis 5b. Schematicism will moderate the effects on liking of congruence in implicit performance theories.

METHODS

Sample and Procedures

The sample consisted of 18 supervisors and 76 subordinates who were employed in the marketing division of a midwestern electric company. The average dyadic tenure was two years, three months. Nineteen subordinates were women, and 57 were men. To maintain rater anonymity, we did not collect age and other demographic data.

Data were collected from all subordinates via a mail survey. Included with each survey was a cover letter that explained the purpose of the study and assured respondents of confidentiality and anonymity. Of the 150 subordinates surveyed, 99 responded, yielding a 66 percent response rate, but only 76 provided enough usable data to be included in the study. Data for supervisors were collected at a two-day training session. The response rate for supervisors was 100 percent.

Measures

Perceived attitudinal similarity. All of the items that were used in the Liden et al. (1993) measure were used in this study; in addition, we developed four items pertaining to perceptions of similarity in participative decision making. Coefficient alphas for this ten-item measure were .84 and .92 when assessed from the supervisors' and subordinates' perspectives, respectively.

Implicit leadership theories. Following prior work (e.g., Lord, Foti, & De Vader, 1984; Offerman, Kennedy, & Wirtz, 1994), we measured implicit leadership theories by having supervisors and subordinates both rate the prototypicality of several traits and behaviors associated with leadership. Many of the 41 traits that Offerman and colleagues identified as being prototypical of leaders were also previously identified as being leader prototypical by Lord and colleagues (1984). We used 23 traits that either received very high prototypicality ratings in Lord et al. or that were rated as prototypical in both cited studies. To ensure that raters did not indiscriminately assign similar

ratings to all items, we also included three antiprotypical items. However, only those items that were rated by the present sample as being prototypical of leaders (i.e., those items that received mean ratings of four or more on a five-point Likert scale from either supervisors or subordinates) were included in the implicit-leadership-theory measure. Thus, we operationally defined implicit-leadership-theory in a way that was consistent with prior research and the culture of these organizations. The ten implicit-leadership-theory traits were: intelligent, cooperative, enthusiastic, decisive, sincere, goal-oriented, persuasive, wise, dedicated, and motivated. The coefficient alphas for this scale were .80 and .68 from the supervisors' and subordinates' perspectives, respectively. Because we used only items that received high prototypicality ratings in this sample, this scale can be interpreted as an index of the normativeness of an individual's implicit leadership theories. In other words, it indicates the extent to which an individual's leadership prototype agreed with organizational norms.

Implicit performance theories. A similar process was used to assess the prototypicality of implicit performance theories. Both supervisors and subordinates rated the "good worker" prototypicality of several traits and behaviors previously identified by Wernimont (1971) as typically being expected of subordinates by their supervisors. Beehr, Weisbrodt, and Zagummy (1994) recently used these traits and behaviors as a basis for formation of a functional relationship scale. Again, only those traits that were rated by this sample as being prototypical of a good performer (i.e., mean ratings of four or greater from supervisors or subordinates) were retained for use in this study. These traits were: interested in work, conscientious, gives suggestions, hard-working, honest, thorough, independent thinker, takes suggestions, qualified for job, communicates effectively, reliable, punctual in meeting deadlines, self-motivated, follows through on tasks, enthusiastic, cooperative, and competent. Coefficient alphas for this 17-item scale were .90 and .86 from the supervisors' and subordinates' perspectives, respectively. Because we used only items that received high prototypicality ratings in this sample, the scale can be interpreted as an index of the normativeness of an individual's implicit performance theories.

Self-schemas. Items included on the implicit leadership and performance theory measures were also rated in terms of self-schemas. Using a method developed by Markus and her colleagues (Catrambone & Markus, 1987; Fong & Markus, 1982; Markus et al., 1985), we asked subjects to place a checkmark next to the adjectives that they considered to be self-descriptive. If items were checked, subjects then rated the importance of the item to their self-concepts on a one-to-five Likert scale. Following the work of Markus, we combined these two ratings, yielding a zero-to-five scale that indicates centrality of an item to an individual's self-schema. Smith, Brown, Lord, and Engle (1996) found the leadership portion of the self-schema measure to be significantly correlated with a biographical indicator of leadership activities (Mumford, O'Connor, Clifton, Connelly, & Zacarro, 1993).

Coefficient alphas for the ten-item leadership self-schema scale were .60 and .77 for supervisor and subordinate ratings, respectively. For the performance self-schema scales, alphas were .86 for supervisors' ratings and .82 for subordinates' ratings. Since we only included items that received high prototypicality ratings (greater than or equal to four) in this sample, these scales can be interpreted as the extent to which subordinates or supervisors viewed an organizationally defined domain as being self-descriptive. In other words, they indicate the extent to which an organizationally defined leadership or performance prototype was descriptive of and important to an individual's self-concept.

Liking. Four items adapted from Turban et al. (1990) and Wayne and Ferris (1990) were used to assess a supervisor-subordinate dyad member's liking of the other member of the dyad. All items were measured on a five-point Likert scale. Internal consistency estimates were .88 for the supervisor version of the scale and .94 for the subordinate version of the scale.

Leader-member-exchange quality. Following the recommendations of Graen and Uhl-Bien (1995), we used the LMX-7 scale (Scandura & Schriesheim, 1994). Internal consistency estimates were .91 from the supervisors' perspective and .88 from the subordinates' perspective.

Positive and negative affectivity. We measured positive and negative affectivity using the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The scale consists of ten adjectives that assess positive affectivity and ten adjectives that assess negative affectivity. Participants rated the extent to which the adjectives generally described themselves. Coefficient alphas for the positive affectivity scale were .67 and .88 from the supervisors' and subordinates' perspectives, respectively. For the negative affectivity scale, internal consistency estimates from the supervisors' and subordinates' perspectives were .88 and .84, respectively.

RESULTS

Table 1 presents the means, standard deviations, coefficient alphas, and intercorrelations for all scales. We also examined the effects of dyadic tenure, but since its inclusion had no impact on the results, it was excluded from reported analyses.

Tests of Hypotheses

We tested hypotheses using correlations and hierarchical regression analysis. Hypotheses 1a and 1b predicted that liking would have a positive effect on exchange relationships as assessed from the perspectives of both supervisors and subordinates. As Table 1 shows, for both supervisors' and subordinates' ratings of LMX quality, liking for the other dyad members had a very strong association with rated leader-member-exchange quality. Supervisors' liking of subordinates was significantly correlated with their LMX ratings ($r_{74} = .88$, $p < .001$), and subordinates' liking of supervisors was correlated with their LMX ratings ($r_{74} = .79$, $p < .001$). These findings are consistent with past leadership research (Liden et al., 1993; Wayne & Ferris, 1990).

Hypothesis 2a predicted that perceived attitudinal similarity (PAS)

TABLE 1
Means, Standard Deviations, and Interscale Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Supervisor																						
1. Perceived attitudinal similarity	34.3	6.4	.84																			
2. Implicit leadership theories	41.4	3.3	.40	.80																		
3. Implicit performance theories	72.9	6.9	.25	.86	.90																	
4. Leadership self-schemas	35.0	7.6	.44	.59	.58	.80																
5. Performance self-schemas	64.9	13.5	.37	.67	.67	.92	.86															
6. Liking	15.3	2.8	.74	.45	.32	.31	.28	.88														
7. Leader-member-exchange quality	26.8	5.1	.75	.42	.37	.36	.34	.88	.91													
8. Positive affectivity	39.5	3.1	.21	.59	.59	.53	.62	.25	.21	.67												
9. Negative affectivity	15.2	4.1	−.39	−.34	−.07	−.46	−.40	−.18	−.16	−.17	.88											
Subordinate																						
10. Perceived attitudinal similarity	33.2	6.6	.13	.15	.13	−.24	−.17	.30	.24	−.22	.09	.92										
11. Implicit leadership theories	43.4	3.4	−.07	.00	−.02	−.02	−.01	.09	.03	.12	.06	−.01	.68									
12. Implicit performance theories	74.8	5.9	−.09	−.19	−.19	−.10	−.12	−.03	−.08	.01	.03	−.03	.70	.86								
13. Leadership self-schemas	34.2	10.3	.16	.04	−.03	.02	−.04	.16	.11	.11	.09	.09	.40	.49	.77							
14. Performance self-schemas	65.6	13.4	.21	.06	−.08	.01	−.07	.23	.16	.08	−.07	.18	.31	.46	.85	.82						
15. Liking	15.7	3.2	.21	.18	.16	−.17	−.12	.44	.42	−.12	.16	.75	.09	.01	.15	.18	.94					
16. Leader-member-exchange quality	26.0	4.8	.28	.19	.13	−.13	−.09	.35	.32	.02	.07	.64	−.00	−.09	.12	.17	.79	.88				
17. Positive affectivity	37.6	6.0	.20	.04	.06	−.00	−.01	.17	.17	−.04	.06	.31	.29	.31	.60	.51	.28	.33	.88			
18. Negative affectivity	15.8	5.0	−.22	−.01	−.00	.12	.13	−.25	−.22	.14	−.16	.45	−.17	−.11	−.36	−.30	−.52	−.55	−.54	.84		
19. Implicit leadership theory congruence	0.93	0.25	−.10	−.23	−.17	.01	−.04	−.13	−.13	−.03	.09	−.19	.07	.11	.18	.17	−.13	−.12	.08	.08	NA	
20. Implicit performance theory congruence	0.90	0.26	−.10	−.38	−.45	−.19	−.23	−.23	−.19	−.22	−.10	−.15	.14	.32	.07	.04	−.06	−.08	.09	.05	.34	NA

[a] Correlations above |.34| are significant at $p < .01$; those above |.24| are significant at $p < .05$. Coefficient alphas are on the diagonal. *Ns* vary from 72 to 76 because of missing data. "NA" means "not applicable."

TABLE 2
Results of Hierarchical Analysis Testing Mediation by Liking of Perceived Attitudinal Similarity and Performance Congruence Effects on LMX[a]

Predictor	β	R^2	*F*	*df*
Supervisor-rated LMX				
Model 1				
Supervisor PAS	.75***	.57	89.9?***	1, 68
Model 2				
Supervisor PAS	.23**			
Supervisor liking	.71***	.80	132.85***	2, 67
Subordinate-rated LMX				
Model 1				
Subordinate PAS	.64***	.40	49.65***	1, 73
Model 2				
Subordinate PAS	.12			
Subordinate liking	.70***	.62	58.89***	2, 71
Supervisor-rated LMX				
Model 1				
Implicit-performance-theory congruence	−.19†	.04	2.92†	1, 74
Model 2				
Implicit-performance-theory congruence	.01			
Supervisor liking	.88**	.77	124.18***	2, 73

[a] Adjusted R^2s were .01 to .02 lower than R^2 values.
† $p < .10$
** $p < .01$
*** $p < .001$

would have a significant, positive relationship with liking, and Hypothesis 2b predicted that liking would mediate the relationship between perceived attitudinal similarity and LMX as assessed from both the supervisors' and subordinates' perspectives. Supervisors' PAS was significantly correlated with their ratings of both liking ($r_{70} = .74$, $p < .001$) and LMX quality ($r_{70} = .75$, $p < .001$), and subordinates' PAS was significantly correlated with both their liking of supervisors ($r_{75} = .75$, $p < .001$) and with LMX ratings ($r_{75} = .64$, $p < .001$). These results support Hypothesis 2a and establish the conditions required to test for mediation (Baron & Kenny, 1986). Table 2 completes the analysis of mediation, showing a reduction in the relationship of PAS and LMX after we controlled for liking. The effects on LMX quality of supervisor-perceived attitudinal similarity were only partially mediated, with the PAS regression weight being reduced from .75 to .23 by controlling for liking, but this latter weight was still significant at $p < .01$. For subordinate-perceived attitudinal similarity, complete mediation occurred, as the PAS regression weight was reduced from .64 to a nonsignificant .12 value.

Hypothesis 3a predicted that supervisor and subordinate congruence in implicit leadership theories would correlate with subordinate liking. We computed the implicit-leadership-theory congruence index by taking the

square root of the mean of the squared differences[1] of supervisors' and subordinates' ratings of the ten leadership adjectives. This measure was not significantly related either to subordinate-rated liking ($r_{75} = -.13$, $p > .25$) or to subordinate-rated LMX quality ($r_{75} = -.12$, $p > .25$), although both correlations were in the predicted direction. According to the logic of Baron and Kenny (1986), this lack of significant relationship precludes the proposed test of mediation (Hypothesis 3b).

Hypothesis 4a posited that supervisor and subordinate congruence on implicit performance theories would significantly relate to supervisors' liking of subordinates. As predicted, congruence in implicit performance theories was significantly related to both supervisor-rated liking of subordinates ($r_{76} = -.23$, $p < .05$) and supervisor-rated LMX quality ($r_{76} = -.19$, $p < .05$; one-tailed tests). To test for mediation, we regressed LMX quality on both liking and congruence and found that the congruence regression weight was reduced from −.19 to a nonsignificant .01, a result fully supporting Hypothesis 4b (see the last section of Table 2). Thus, Hypotheses 4a and 4b were fully supported. These results represent an important and unique contribution of the present research, showing that congruence in job-relevant implicit performance theories does indeed have a substantial impact on supervisor liking and leader-member-exchange quality and that liking mediates effects of implicit performance theory congruence on LMX.

Hypotheses 5a and 5b posited that the relation of liking and implicit theory congruence would be stronger when raters were more schematic. We tested these hypotheses by using moderated regression analysis to add both the main effects of self-schemas and the interaction of self-schemas and implicit theories. In all four instances (effects of subordinates' implicit leadership theories on liking and LMX and effects of supervisors' implicit performance theories on liking and LMX), the effects of interaction terms were nonsignificant. (These findings are available from the first author.) Thus, Hypotheses 5a and 5b were not supported.

Problems with Congruence Indexes

Edwards (1994) noted that the square root of the sum of squared differences (*D*) has frequently been used to represent similarity between supervisors and subordinates. Nevertheless, like other difference scores, it creates a number of difficulties that include the following: a number of underlying but generally untested assumptions (Edwards, 1994), difference scores being less reliable than their components (Johns, 1981), and difference scores being difficult to interpret, in part because the impact of the supervisor and subordinate components depends on their relative variances. Edwards suggested ways to test the inherent constraints of profile congruence measures such as *D* by using multivariate analyses that treat each item as a separate

[1] Edwards (1994) calls this statistic *D*.

dimension. However, these methods require far larger samples than were available in this study.

Two aspects of our data reduce the difficulties in interpreting *D*. First, to determine whether it made sense to think of implicit performance and leadership theories as scales rather than profiles, we conducted principal components analyses for implicit leadership and implicit performance items using subordinate ratings. In both instances, "scree" plots provided clear support for one-factor solutions. Consequently, we aggregated items to form scales for implicit theories that, as is explained in the Methods section, have adequate reliability. Moreover, Table 1 shows that the supervisor and subordinate scales have nearly identical variance for both the implicit leadership and implicit performance scales. Second, it is possible to empirically examine the relation of *D* to these component scales. We do this in Table 3, following Edwards's (1994) recommendations for examining absolute differences. The main rationale for the *D*-profile similarity measure is to treat the effects of differences in either direction as being equivalent, suggesting that an absolute difference model would be more appropriate.

The first two terms in the regression model shown in Table 3 reflect the separate effects of supervisor and subordinate implicit theories, respectively. The remaining three terms, computed as recommended by Edwards (1994: 60), allow the regression slopes and intercepts to change at the point at which supervisor and subordinate ratings are equal. As shown in Table 3, this model explained a substantial amount of variance in the *D*s of both implicit leadership (44%) and implicit performance (62%) theories. Moreover, there was clear support for the constraints Edwards (1994: 62) identified as being inherent in absolute difference models. That is, (1) the weights for the supervisor and subordinate implicit theory components were significant, of opposite sign, and of nearly equal size (in both cases, the supervisor component was not significantly different from the absolute value of the subordinate component); (2) the interaction of W1[2] and the supervisor component was opposite in sign to the supervisor component and was approximately twice as large (e.g., its absolute value did not significantly differ from two times the supervisor component); (3) the interaction of W1 and the subordinate component was not significantly different from the absolute value of the interaction of W1 and the supervisor component, and (4) W1 was nonsignificant for performance although it was highly significant for the leadership congruence regressions.

In sum, we believe there is clear justification for interpreting our *D*-measure as primarily reflecting the absolute differences in supervisors' and subordinates' implicit theories. However, we believe it is a highly sensitive measure because it can also pick up differences in specific items, not just

[2] W1 is a dummy variable that takes a value of 0 if the value of the supervisor implicit theory is greater than or equal to that of the subordinate implicit theory and 1 if the supervisor implicit theory has a value lower than the subordinate implicit theory.

differences in aggregate scales. Supervisors and subordinates could have equivalent scale scores and yet differ on specific items (e.g., honesty) that may have substantial consequences for liking and LMX relations.

Exploratory Analyses

Two other criticisms of difference scales raised by Edwards (1994) are that they are harder to interpret than their components and that they generally explain less variance than their components. These are valid criticisms. Consequently, in this section, we explore the relations of separate supervisor and subordinate implicit theory scales to liking and LMX. Though not driven by a priori theory as our tests of hypotheses were, we expected that these analyses might reveal unexpected effects, especially since no prior research had examined the effects of implicit theories on LMX.

As Table 4 shows, we regressed dependent variables on implicit theories and self-schemas. These analyses show several interesting associations of implicit theories and self-schemas with both liking and LMX quality. As indicated by the regression weights in Table 4, the normativeness of subordinate *performance* self-schemas was significantly related to most measures of liking and LMX quality. This result makes good sense if self-schemas accurately portray subordinate qualities. That is, liking and LMX quality were higher when subordinates' self-schemas matched organizationally normative definitions of good performance.

A second consistent finding shown in Table 4 is that supervisor self-schemas have negative relations to subordinate liking and LMX quality in both the leadership and performance domains. This result is consistent with Catrambone and colleagues' (1996) argument that self-schemas are used as

TABLE 3
Results of Regression Analysis Testing Effects of Implicit Theory Congruence on Component Variables

Predictor[a]	Leadership Congruence	Performance Congruence
Supervisor implicit theory	0.05**	0.02**
Subordinate implicit theory	−0.07***	−0.03***
W1	−1.68*	−0.52[b]
W1 × supervisor implicit theory	−0.09***	−0.56***
W1 × subordinate implicit theory	0.13***	0.62***
R^2	0.44	0.62
F	10.70***	22.60***
Adjusted R^2	0.40	0.59

[a] W1 is a dummy variable that takes a value of 0 if supervisor implicit theory ≥ subordinate implicit theory and of 1 if supervisor implicit theory < subordinate implicit theory. For leadership, $df = 5, 68$; for performance, $df = 5, 70$. Values are unstandardized regression coefficients.

[b] $p > .47$

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 4
Results of Regression Analysis of Effects of Liking and LMX on Implicit Theories and Self-Schemas[a]

Dependent Variable	Supervisor Implicit Theories	Subordinate Implicit Theories	Supervisor Self-Schemas	Subordinate Self-Schemas	R^2	Adjusted R^2	F	df	Subordinate Negative Affectivity ΔR^2	Subordinate Negative Affectivity $F_{\Delta R}{}^2$
Leadership variables										
Supervisor liking	.43**[b]	.04	.05	.14	.24	.20	5.47**	4, 69	.05	4.28*
Supervisor LMX	.34**[b]	−.01	.16	.10	.21	.17	4.70**	4, 69	.05	4.31*
Subordinate liking	.42**[b]	.02	−.42**[b]	.14	.17	.12	3.42**	4, 68	.20	20.21**
Subordinate LMX	.42**[b]	−.06	−.37**[b]	.14	.15	.09	2.88*	4, 68	.27	30.47**
Performance variables										
Supervisor liking	.23	−.11	.13	.31*[c]	.18	.14	3.95**	4, 71	.04	3.66†
Supervisor LMX	.26†	−.12	.17	.24*	.20	.15	4.42**	4, 71	.04	3.43†
Subordinate liking	.44**[b]	−.06	−.41**[b]	.22†	.16	.11	3.28*	4, 70	.19	19.01**
Subordinate LMX	.33*[c]	−.19[c]	−.32*	.26*	.13	.08	2.71*	4, 70	.23	23.81**

[a] Standardized regression coefficients are shown.
[b] Value is significant at $p < .05$ with negative affectivity included in the regression equation.
[c] Value is significant at $p < .10$ with negative affectivity included in the regression equation.
† $p < .10$
* $p < .05$
** $p < .01$

habitual referents and with Dunning and Hayes's (1996) research showing that self-referenced judgments are more stringent. That is, supervisors who were more schematic should have been harsher judges, so exchanges would have been of lower quality. Two laboratory-based studies using similar leadership self-schema measures and standardized stimuli (Smith et al., 1996) also found that schematicism related negatively to favorableness of ratings. Together, these results suggest that leaders who most strongly identify with organizational norms and values may also run the risk of undermining dyadic relationships by expecting too much of subordinates and judging them too harshly. The fact that negative effects of supervisors' self-schemas are reflected only in subordinates' ratings of liking and LMX suggest that supervisors may not intend or even recognize such processes.

Finally, Table 4 shows the very general positive effect of normativeness of supervisory implicit theories. Supervisors whose implicit leadership or performance theories corresponded more closely to organizational norms had higher-quality exchanges and higher liking as rated from both supervisor and subordinate perspectives. One explanation of this general effect is that, even if subordinates have idiosyncratic implicit theories, learning to adjust to supervisors' expectations is easier when these expectations correspond to widely held organizational norms. Though the results in Table 4 were not predicted, they make good sense from the perspective of our underlying theoretical approach. Certainly these findings illustrate the value of the broader approach to studying congruence recommended by Edwards (1994).

Method Effects

Our examination of congruence in implicit theories required that both rater and ratee variables be used as predictors, raising the possibility that same-source bias would inflate relations when predictors and criterion variables came from the same person. A careful examination of Table 4 suggests this was not a serious problem. Note that supervisors' implicit theories consistently predicted dependent variables regardless of whether they were provided by supervisors or subordinates. Further, supervisor self-schemas had significant effects on subordinate-rated liking and LMX quality, but not on supervisor-rated variables. Similarly, subordinate performance self-schemas showed little variability in predicting dependent variables and, in fact, were somewhat stronger predictors of supervisor-rated variables than subordinate-rated liking or LMX. This general pattern is inconsistent with the view that same-source bias is a significant explanation for observed results. Consistent with this interpretation, recent latent variable studies that have shown method effects in measurement models have not indicated that they bias structural parameters (Williams & Anderson, 1994).

Since many of the variables we investigated—liking, LMX quality, perceived similarity, and normativeness of implicit leadership or performance theories—were generally positively evaluated, we also explored the potential for individual differences in raters' positive or negative affectivity to provide alternative explanations for results. In no case did the inclusion of

raters' positive or negative affectivity in equations substantially alter interpretations of results. Although regression weights for some of the weaker results presented in the left portion of Table 4 may not have remained significant when negative affectivity was included as a predictor (e.g., the effects of performance self-schemas), the actual magnitude of these weights was only changed slightly. As shown by the increment in R^2 in the right portion of Table 4, subordinate negative affectivity provided a substantial increment in variance explained, suggesting to us that this variable warrants further study as a potential determinant of LMX. Regression weights for negative affectivity were generally significant and always negative, showing that subordinates who were high in negative affectivity were liked less by their supervisors and had lower-quality leader-member exchanges.

DISCUSSION

To summarize results, we found first that liking was strongly related to both supervisor and subordinate ratings of LMX quality; second, perceived attitudinal similarity was strongly related to both LMX ratings and liking and, although liking completely mediated the effects of PAS on subordinate-rated LMX, only partial mediation occurred with supervisor-rated LMX; third, implicit-leadership-theory congruence did not predict subordinate liking or LMX ratings; fourth, implicit-performance-theory congruence did predict supervisor liking and LMX, and liking fully mediated the effects of implicit performance theory congruence on LMX; and fifth, self-schemas did not moderate effects of congruence in implicit leadership theories or implicit performance theories on liking.

Exploratory analyses showed that (1) liking and LMX were higher when supervisors' implicit theories were normative, an effect that held for both leadership and performance theories; (2) subordinates with normative performance self-schemas were better liked and had higher-quality exchanges; (3) supervisor self-schemas in both leadership and performance domains were negatively related to subordinate ratings of liking and LMX; and (4) subordinate negative affectivity was negatively associated with liking and LMX quality. Though not predicted, such results offer intriguing possibilities to be explored in future research.

The overwhelming significance associated with the prediction of LMX by liking is consistent with prior work showing that liking plays a dominant role in the development of leader-member exchanges (Liden et al., 1993), although our cross-sectional data do not test a developmental model and may also reflect the effects of LMX on liking. We also found very strong support for the mediational role of liking, with the effects of perceived attitudinal similarity operating primarily through liking. A plausible interpretation of these findings is that perceptions of similarity lead an individual to identify with the other dyadic member and produce an affective reaction that has a direct effect on social relationships (Greenwald & Banaji, 1995).

From the supervisors' perspective, implicit-performance-theory congruence predicted liking and LMX quality, and liking also mediated the effects

of congruence on leader-member-exchange quality. This aspect of the study represents an important contribution to LMX research. It is consistent with our proposal that cognitive factors influence liking, which in turn affects LMX. However, it should be stressed that our results were correlational and cross-sectional, so it is also possible that causality flows in the other direction. That is, individuals who like each other may spend more time together and come to have similar implicit performance theories. Future research might also explore the relation of implicit-performance-theory congruence to role-dependent variables like ambiguity and turnover.

Previous LMX research has suggested that performance was not an important determinant of exchange quality in two field settings (Wayne & Ferris, 1990: 494). Wayne and Ferris (1990) theorized that supervisors made on-line judgments of their subordinates, relying primarily on evaluative concepts (liking) rather than on general traits (performance evaluations). More recently, Wayne and Liden (1995) showed that perceptions of similarity mediated the relationship between employee impression management and supervisor-rated performance evaluations. We agree that supervisors are likely to form global on-line assessments of their subordinates, but these assessments may be based on performance perceptions as well as on PAS. However, this process likely involves simple categorization based on implicit performance theories (e.g., do subordinates match prototypical definitions of implicit theories) rather than recall of specific performance incidents.

Subordinates' ability to match the attributes represented in supervisors' schemas, as well as the subordinates' personality characteristics (i.e., negative affectivity), were also influential predictors of supervisor liking. One way for subordinates to increase the probability of a match may be to increase job-focused impression management, which positively affects performance ratings and liking (Wayne & Ferris, 1990).

One unsupported prediction of this study was that implicit-leadership-theory congruence did not predict subordinate-rated liking or LMX. Yet when the components of congruence were examined, implicit leadership theories proved to be important predictors of all dependent variables. Thus, although congruence may not be critical, the normativeness of both subordinate and supervisor implicit leadership theories did relate to liking and LMX quality. This effect was clearly stronger for supervisors than for subordinates. One implication of this result is that training supervisors in organizationally accepted leadership theories might be a useful supplement to less formal socialization processes. Further, a long-run consequence of such prototype training may be an improvement in leader-member exchanges.

We should also note that predictions concerning the moderating role of self-schemas were not supported. Whether central or noncentral to subordinates' self-concepts, the normativeness of implicit theories related to liking and LMX, as shown in Table 4. One explanation for this failure to detect moderating effects of self-schemas in light of the many main effects of implicit theories and self-schemas is the substantial sample size required to

find moderator effects (McClelland & Judd, 1993). Many of the findings supporting the expected moderating effects of self-schemas on social perceptions have been based on laboratory research. As McClelland and Judd noted, the natural distribution of variables in field studies rarely creates optimal conditions for testing moderator effects, whereas experimental manipulations are designed to provide optimal tests. In addition, moderator analyses are very susceptible to low reliability (Aguinis, 1995), which was somewhat of a problem with our implicit-leadership-theory measure and is generally a problem with difference scores. Because difference scores have lower reliability, we also looked for moderator effects using the separate components rather than congruence measures. These results (available from the first author) were also nonsignificant.

A major finding of our study was the identification of two cognitive correlates of liking: perceived attitudinal similarity and congruence in implicit performance theories. In addition, as predicted, we found the effects of PAS on leader-member-exchange quality were generally mediated by liking. This pattern is consistent with our suggestion that leader-member exchanges are guided by easily formed and remembered affective reactions. Interestingly, had our focus been on behavioral correlates of liking, we might have interpreted similar mediation by liking as merely rating error. However, it may be more appropriate to think of affective evaluations as providing a convenient and quite general summary of important cognitive variables. Thus, as Robbins and DeNisi (1992) suggested, affective variables may incorporate performance information. Future research might extend this perspective by examining other cognitive correlates of liking and the mediational effect of liking on other outcome variables.

As in many applied studies, practical limitations influenced our research strategy and may limit the generalizability of our findings. Specifically, organizational characteristics and the focal tasks of employees may qualify the effects we found. Thus, replication using different types of samples is needed. In addition, practical concerns limited sample size and the number of measures that could be included. Finally, and perhaps most importantly, this study was cross-sectional in design. Many of the variables we studied (i.e., PAS, implicit theories) are likely to be influential from the initial states of exchange relationships. Future research using a longitudinal design should examine the impact of these variables throughout the course of exchange relationships.

With these caveats in mind, it is interesting to consider the possible practical implications of our study. As we noted at the beginning of this note and as an extensive line of research substantiates, LMX impacts many job-related outcomes. Organizations can ill afford to allow low-quality LMX relationships to permeate their workforces, as the impact of these relationships may be seen in the bottom line (Scandura & Graen, 1984). When appropriate, LMX-based interventions may help to remedy these situations. Our research suggests that such interventions should include some form of "cognitive norming." That is, organizational performance standards should

be explicitly provided to both supervisors and subordinates. One mechanism for delivering these normative cognitive performance standards is frame-of-reference training (Hauenstein & Foti, 1989), which has been applied in performance appraisal settings.

Another practical implication of our study has to do with the finding that subordinate negative affectivity adversely influenced supervisor-rated LMX. George (1991) asserted that individuals high in negative affectivity may not perform enough prosocial behaviors to be evaluated favorably by work group members. In view of the results of our study, it may be particularly important for subordinates high on negative affectivity to engage in impression management, especially as Wayne and Ferris (1990) showed that subordinate impression management affected supervisor liking and LMX quality. Subordinates who are high in negative affectivity may create more positive exchange relationships both by helping others in their work settings and by engaging in impression management behaviors.

REFERENCES

Aguinis, H. 1995. Statistical power problems with moderated multiple regression in management research. ***Journal of Management,*** 21: 1141–1158.

Baron, R. M., & Kenny, D. A. 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. ***Journal of Personality and Social Psychology,*** 51: 1173–1182.

Beehr, T. A., Weisbrodt, D. M., & Zagummy, M. J. 1994. Satisfaction with subordinates: A neglected research issue concerning supervisors. ***Journal of Applied Social Psychology,*** 24: 1665–1684.

Blau, G. 1988. An investigation of apprenticeship organizational socialization strategy. ***Journal of Vocational Behavior,*** 32: 176–195.

Byrne, D. 1971. ***The attraction paradigm.*** New York: Academic Press.

Byrne, D., Clore, G. L., & Smeaton, G. 1986. The attraction hypothesis: Do similar attitudes affect anything? ***Journal of Personality and Social Psychology,*** 51: 1167–1170.

Catrambone, R., Beike, D., & Niedenthal, P. 1996. Is the self-concept a habitual referent in judgments of similarity? ***Psychological Science,*** 7: 158–163.

Catrambone, R., & Markus, H. 1987. The role of self-schemas in going beyond the information given. ***Social Cognition,*** 5: 349–368.

Chartrand, T. L., & Bargh, J. A. 1996. Automatic activation of impression formation and memorization goals: Nonconscious goal priming reproduces effects of explicit task instructions. ***Journal of Personality and Social Psychology,*** 71: 464–478.

Dansereau, F. G., Graen, G., & Haga, W. J. 1975. A vertical dyad linkage approach to leadership within formal organizations: A longitudinal investigation of the role making process. ***Organizational Behavior and Human Performance,*** 13: 46–78.

Dienesch, R. M., & Liden, R. C. 1986. Leader-member exchange model of leadership: A critique and further development. ***Academy of Management Review,*** 10: 527–539.

Dunning, D., & Hayes, A. F. 1996. Evidence for egocentric comparisons in social judgment. ***Journal of Personality and Social Psychology,*** 71: 213–230.

Eden, D. 1990. Pygmalion without interpersonal contrast effects: Whole groups gain from raising manager expectation. ***Journal of Applied Psychology,*** 75: 394–398.

Edwards, J. R. 1994. The study of congruence in organizational behavior research: Critique and a proposed alternative. ***Organizational Behavior and Human Decision Processes,*** 58: 51–100.

Fong, G. T., & Markus, H. 1982. Self-schemas and judgments about others. ***Social Cognition,*** 1: 191–204.

George, J. M. 1991. State or trait: Effects of positive mood on prosocial behaviors at work. ***Journal of Applied Psychology,*** 76: 299–307.

Gilbert, D. T., & Osbourne, R. E. 1989. Thinking backward: Some curable and incurable consequences of cognitive busyness. ***Journal of Personality and Social Psychology,*** 57: 940–949.

Gioia, D. A., Thomas, J. B., Clark, S. M., & Chittipeddi, K. 1994. Symbolism and strategic change in academia: The dynamics of sensemaking and influence. ***Organization Science,*** 5: 363–383.

Graen, G., Liden, R. C., & Hoel, W. 1982. The role of leadership in the employee withdrawal process. ***Journal of Applied Psychology,*** 67: 868–872.

Graen, G. B., & Scandura, T. A. 1987. Toward a psychology of dyadic organizing. In B. M. Staw & L. L. Cummings (Eds.), ***Research in organizational behavior,*** vol. 9: 175–208. Greenwich, CT: JAI Press.

Graen, G. B., & Uhl-Bien, M. 1995. Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. ***Leadership Quarterly,*** 6: 219–247.

Greenwald, A. G., & Banaji, M. R. 1995. Implicit social cognition: Attitudes, self-esteem, and stereotypes. ***Psychological Review,*** 102: 4–27.

Hanges, P. J., Braverman, E. P., & Rentsch, J. R. 1991. Changes in raters' impressions of subordinates: A catastrophe model. ***Journal of Applied Psychology,*** 76: 878–888.

Hauenstein, N. M. A., & Foti, R. J. 1989. From laboratory to practice: Neglected issues in implementing frame-of-reference training. ***Personnel Psychology,*** 42: 359–378.

Johns, G. 1981. Difference score measures of organizational behavior variables: A critique. ***Organizational Behavior and Human Performance,*** 27: 443–463.

Kozlowski, S. W. J., & Doherty, M. L. 1989. Integration of climate and leadership: Examination of a neglected issue. ***Journal of Applied Psychology,*** 74: 546–553.

Liden, R. C., Wayne, S. J., & Stilwell, D. 1993. A longitudinal study of the early development of leader-member exchanges. ***Journal of Applied Psychology,*** 78: 662–674.

Lord, R. G., Foti, R. J., & De Vader, C. L. 1984. A test of leadership categorization theory: Internal structure, information processing, and leadership perceptions. ***Organizational Behavior and Human Performance,*** 34: 343–378.

Lord, R. G., & Maher, K. J. 1991. ***Leadership and information processing: Linking perceptions and performance.*** New York: Routledge.

Maher, K. J. 1995. The role of cognitive load in supervisor attributions. In M. J. Martinko (Ed.), ***Attribution theory: An organizational perspective:*** 193–210. Delray Beach, FL: St. Lucie Press.

Markus, H., Smith, J., & Moreland, R. L. 1985. Role of the self-concept in the perception of others. ***Journal of Personality and Social Psychology,*** 49: 1494–1512.

McClelland, G. H., & Judd, C. M. 1993. Statistical difficulties on detecting interactions and moderator effects. ***Psychological Bulletin,*** 114: 376–390.

Meindl, J. R. 1995. The romance of leadership as a follower-centric theory: A social constructionist approach. ***Leadership Quarterly,*** 6: 329–341.

Mumford, M. D., O'Connor, J., Clifton, T. C., Connelly, M. S., & Zacarro, S. J. 1993. Background data constructs as predictors of leadership behavior. ***Human Performance,*** 6: 151–195.

Offerman, L. R., Kennedy, J. K., & Wirtz, P. W. 1994. Implicit leadership theories: Content, structure, and generalizability. ***Leadership Quarterly,*** 5: 43–58.

Ohlsson, S. 1996. Learning from performance errors. ***Psychological Review,*** 103: 241–262.

Pulakos, E. D., & Wexley, K. N. 1983. The relationship among perceptual similarity, sex, and performance ratings in manager-subordinate dyads. ***Academy of Management Journal,*** 26: 129–139.

Robbins, T. L., & DeNisi, A. S. 1994. A closer look at interpersonal affect as a distinct influence on cognitive processing in performance evaluations. ***Journal of Applied Psychology,*** 79: 341–353.

Scandura, T. A., & Graen, G. B. 1984. Moderating effects of initial leader-member exchange status on the effects of leadership intervention. ***Journal of Applied Psychology,*** 69: 428–436.

Scandura, T. A., & Schriesheim, C. A. 1994. Leader-member exchange and supervisor career mentoring as complementary constructs in leadership research. ***Academy of Management Journal,*** 37: 1588–1602.

Schneider, D. J., & Blankmeyer, B. L. 1983. Prototype salience and implicit personality theories. ***Journal of Personality and Social Psychology,*** 44: 712–722.

Smith, E. R. 1994. Procedural knowledge and processing strategies in social cognition. In R. S. Wyer, Jr. & T. K. Srull (Eds.), ***Handbook of social cognition,*** vol. 1: 80–115. Hillsdale, NJ: LEA.

Smith, W. G., Brown, D., Lord, R. G., & Engle, E. M. 1996. ***Implicit measures of leadership.*** Unpublished manuscript, University of Akron.

Srull, T. K., & Wyer, R. G., Jr. 1989. Person memory and judgment. ***Psychological Review,*** 96: 58–83.

Turban, D. B., & Jones, A. P. 1988. Supervisor-subordinate similarity: Types, effects, and mechanisms. ***Journal of Applied Psychology,*** 73: 228–234.

Turban, D. B., Jones, A. P., & Rozelle, R. M. 1990. Influences of supervisor liking of a subordinate and the reward context on the treatment and evaluation of that subordinate. ***Motivation and Emotion,*** 14: 215–233.

Watson, D., Clark, L. A., & Tellegen, A. 1988. Development and validation of brief measures of positive and negative affect: The PANAS scales. ***Journal of Personality and Social Psychology,*** 54: 1063–1070.

Wayne, S. J., & Ferris, G. R. 1990. Influence tactics, affect, and exchange quality in supervisor-subordinate interactions: A laboratory experiment and field study. ***Journal of Applied Psychology,*** 75: 487–499.

Wayne, S. J., & Liden, R. C. 1995. Effects of impression management on performance ratings: A longitudinal study. ***Academy of Management Journal,*** 38: 232–260.

Wernimont, P. F. 1971. What supervisors and subordinates expect of each other. ***Personnel Journal,*** 50: 204–208.

Williams, L. J., & Anderson, S. E. 1994. An alternative approach to method effects by using latent-variable models: Applications in organizational behavior research. ***Journal of Applied Psychology,*** 79: 323–331.

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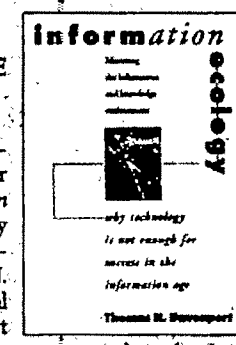

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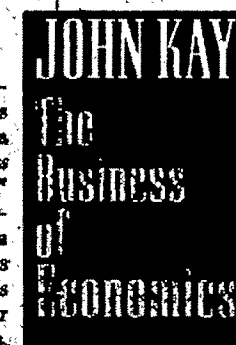

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CALL FOR PAPERS

RESEARCH CONFERENCE: MANAGEMENT AND ORGANIZATIONS IN CHINA

Hong Kong University of Science and Technology
January 15–17, 1998

The Center for Research on Organizations at the Hong Kong University of Science and Technology (HKUST) is sponsoring a research conference, "Management and Organizations in China," to be held January 15–17, 1998, in Hong Kong. The Center was established in January 1997 by the Department of Management of Organizations, School of Business and Management, to help HKUST become the world intellectual leader for knowledge related to the practice of management in the Greater China region (i.e., Taiwan, Hong Kong, and the People's Republic of China).

The conference is intended to provide a forum for discussing the most important research projects currently being conducted on management and organizations in China and to set the research agenda for the field. Research could be comparative, cross-cultural, or indigenous and on any topics related to the management of organizations by either local Chinese businesses or multinational corporations operating in the Chinese context. Issues to be addressed could be in the areas of strategy, organizational theory and behavior, entrepreneurship, or human resource management. Both theoretical and empirical papers are welcome. The selection process will be competitive, and only a small number of papers will be accepted for presentation. The conference program will also feature a keynote presentation by Dr. John Child, a leading China-management scholar. We are exploring the possibility of publishing the conference papers as a book from a leading international publisher.

Scholars interested in presenting papers are invited to submit a complete version to the conference coordinator. Papers must be original and should not normally exceed 30 double-spaced pages. Authors should follow *AMR*/*AMJ*'s "Style Guide for Authors" in preparing manuscripts. All papers must be received by October 17, 1997. Notice of acceptance will be issued on November 15, 1997. Completed manuscripts are due by December 20 for distribution at the conference.

The conference will be held on the campus of HKUST, with all out-of-town participants housed in the university's brand-new University Center. The registration fee for the conference is US$500, which includes a four-night stay at the University Center and meals during the conference. The primary presenter of each paper will receive an honorarium of US$500 to offset the registration fee.

Questions regarding the conference can be addressed to the conference co-chairs:

Dr. Anne Tsui (e-mail: mnastsui@uxmail.ust.hk)
Dr. J. T. Li (e-mail: mnjtli@uxmail.ust.hk)
Dr. Elizabeth Weldon (e-mail: mnweldon@uxmail.ust.hk).

Submission: Papers must be received no later than October 17, 1997. Please submit three (3) copies of your paper directly to the conference coordinator:

Ms. Iris Ng, China Conference Coordinator
Department of Management of Organizations
School of Business and Management
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SPECIAL RESEARCH FORUM CALL FOR PAPERS: STAKEHOLDERS, SOCIAL RESPONSIBILITY, AND PERFORMANCE

The *Academy of Management Journal* is pleased to announce a special research forum on stakeholders, social responsibility, and financial and nonfinancial aspects of performance. Guest editors will be R. Edward Freeman and Jeffrey S. Harrison.

We live in a time of dramatic social, political, technological, and economic change on a global scale. Turbulence has caused societies to question even the most fundamental issues of right and wrong. Heightened ethical sensitivity, increasing competition, and a hyperactive media have combined to create a very difficult management situation. Managers must devise strategies that will make their organizations competitive in the world economy. However, some strategies may lead to actions that various stakeholders find offensive.

Effective stakeholder management is one potential solution to the ethical dilemmas managers face. Some scholars envision effective organizations as those whose managers are so aware of and responsive to their external stakeholders that balancing competing stakeholder interests in an efficient manner is the primary managerial task. From one perspective, this statement is a truism. Almost by definition, successful business organizations are responsive to at least two key stakeholders: stockholders and customers. However, competing stakeholder interests are managed in a multitude of ways, and there is very little empirical support for one stakeholder management model over another. One of the biggest problems in this literature is that measures of social performance are often too heavily influenced by economic performance to provide assistance in untangling the issues.

The purpose of this special research forum is to deal with issues associated with the topics of stakeholder management, social responsibility, and performance. All of the three issues do not need to be addressed in each manuscript. Furthermore, performance can be interpreted as nonfinancial, financial, or both. The following are a few potential research questions that may be addressed:

- Do organizations that actively pursue the interests of a broad set of stakeholders have higher social performance, higher financial performance, or both? How are these types of organizations different from other organizations in terms of structure, systems, or processes?
- Is there a difference in social and/or financial performance among firms that manage their stakeholders differently? In other words, can a useful typology of stakeholder management be developed? What types of organizational outcomes will it explain or predict?
- What is the causal relationship between social performance and financial performance? Do organizations enhance their financial performance through social responsibility or can they simply afford to be responsible because they are economically successful?
- Does more involvement by external stakeholders in internal organizational processes—as members of design teams and planning teams or as advisors, for instance—enhance social performance and/or financial performance? How does such involvement influence work processes, decision processes, motivation, and productivity?
- What are the most important factors that influence society's view of an organization?
- To what extent do government actions such as laws and regulations influence *actual* social and/or financial performance? To what extent do these actions influence organizational processes?
- Does an empirical relationship exist between public relations efforts and perceived social responsibilty?

We would like to encourage the use of a wide range of empirical approaches, including qualitative, quantitative, and combination approaches. Although all articles should have well-developed theoretical foundations, fresh perspectives are both appropriate and welcome.

Authors should follow *AMJ*'s February 1997 "Style Guide for Authors" in preparing manuscripts. Cover letters should request that manuscripts be specifically considered for this special research forum. Submit manuscripts to Anne S. Tsui, *Academy of Management Journal*, c/o Carolyn Haitsch, 861 Bedford Rd., Pleasantville, NY 10570-2799. Contributors should submit six copies of their papers, retaining the original for their files. All contributions should be received no later than February 2, 1998. For further information, contact R. Edward Freeman, The Colgate Darden Graduate School of Business Administration, University of Virginia, Charlottesville, VA 22906, USA; phone, (804) 924-0935; fax, (804) 924-6378; or Jeffrey S. Harrison, College of Business Administration, University of Central Florida, Orlando, FLA 32816-1400, USA, phone, (407) 823-2916; fax, (407) 823-3725; e-mail: Harrison@Bus.UCF.Edu.

SPECIAL RESEARCH FORUM CALL FOR PAPERS: ENTERPRISE STRATEGIES IN EMERGING ECONOMIES

The Academy of Management Journal is pleased to announce a call for papers for a special research forum on firm-level or enterprise strategies in emerging economies. Guest co-editors will be Robert E. Hoskisson, University of Oklahoma, Lorraine Eden, Texas A&M University, Chung-Ming Lau, Chinese University of Hong Kong, and Mike Wright, University of Nottingham.

Emerging economies have become a heterogeneous global phenomenon. For example, the transfer of assets to the private sector has played a key role in the transition from central planning to markets in Central and Eastern Europe. In constrast, the market in China is emerging in a country where formal privatization is eschewed but where significant decentralization to provincial and municipal governments, joint ventures with private and foreign investors, and new private firm creation have occurred. Emerging economies are also important in both Latin America and Southeast Asia, as bureaucratic, authoritarian regimes adopt democratic institutions and market processes.

The adoption of different governmental policies toward the development of domestic markets (e.g., privatization, banking and stock market reform) raises important issues for the strategies adopted by enterprises. For example, undeveloped stock markets may restrict access to finance, and inadequacies in the property rights framework may affect the ability of enterprises to enforce trading relationships and, thus, may affect enterprise managers' ability to develop strategies.

At the same time that domestic policies are focusing on markets, governments are adopting new policies toward participation in foreign markets. Government-business relationships are changing as foreign direct investment (FDI) rules are liberalized, domestic firms begin to venture abroad, and state-owned enterprises compete with local private firms for domestic and foreign markets. New relationships between foreign and domestic enterprises are emerging as strategic alliances replace export-processing-zone and subcontracting arrangements. Enterprises are therefore facing strong environmental pressures for strategic change in emerging economies.

Privatization in emerging economies is creating new foreign investment opportunities in previously closed sectors. According to the 1996 World Investment Report, one-third of all FDI in 1995 flowed into developing countries and 6 percent of those inflows were directly related to privatization. Over 70 percent of privatization FDI went to Latin America and the Caribbean. This trend is even more pronounced in Central and Eastern Europe where, between 1989 and 1994, almost half of all regional FDI inflows were privatization related.

Strategies of foreign multinationals in emerging economies are likely to differ in important ways from those in either OECD market or traditional developing countries. How are multinationals incorporating the emerging market economies into their global production strategies? Are they using direct ownership, joint ventures, or strategic alliances?

Within the emerging economies category, there are ten big emerging markets: the Association of Southeast Asian Nations (ASEAN, including Indonesia, Brunei, Malaysia, Singapore, Thailand, the Philippines, and Vietnam); China (including China, Hong Kong, and Taiwan); India; South Korea; Mexico; Brazil; Argentina; South Africa; Poland; and Turkey. Big emerging markets are expected to offer the greatest commercial growth opportunities in the 21st century. They have large territories and big populations with enormous needs for infrastructure and consumer goods. In the 1990s, they have moved quickly to liberalize their domestic economies, privatize government-owned enterprises, develop their own multinationals, and expand their regional influence. What strategies are domestic and foreign enterprises employing in these markets, and how do they differ from strategies in smaller emerging economies?

The following are some potential topics for Enterprise Strategies in Emerging Economies:

- Single country. Studies addressing these issues are welcome: How do various approaches to the development of enterprises affect enterprise strategy? What is the impact of different modes of corporate governance on the development and effectiveness of strategy? The existence and effectiveness of an entrepreneurial elite able to design and implement appropriate strategies also raises issues. Within enterprises, the roles of various stakeholders may be quite different from those of their counterparts in developed economies. We also encourage studies on competitive strategy, resource deployment, and growth strategies as market-oriented economies emerge.

- Comparative cross-country. Governmental policies to effect transition vary between countries, even within regions such as Central and Eastern Europe or Latin America. Studies comparing the impact of differing policies on enterprise strategies at all levels (headquarters, subsidiary, competitive, etc.) would be welcome. Contributors are to remember, however, that the focus of the call is on firm strategy-level effects, not on government policy or environmental pressures per se.

- Interdisciplinary. Theoretical approaches developed for established market economies may not apply in emerging economies. Submissions that bridge two or more disciplines are encouraged. These may include studies of strategic decision making and strategy implementation.

All papers must be empirical. Because obtaining access to the kind of information used in U.S. strategy studies is often problematical in emerging economies, submissions that use unconventional approaches and data are encouraged. However, studies must demonstrate that the data used meet appropriate criteria for robustness. In preparing manuscripts, authors should follow requirements specified in *AMJ*'s February 1997 "Style Guide for Authors." Send six copies and a cover letter requesting consideration for this special research forum to Anne S. Tsui, Editor, c/o Carolyn Haitsch, Managing Editor, *Academy of Management Journal*, 861 Bedford Rd., Pleasantville, NY 10570-2799. Papers must be received by June 1, 1998. All submissions will be blind reviewed under *AMJ*'s normal review process and criteria. For further information, contact: Robert E. Hoskisson, Rath Chair in Strategic Management, Michael F. Price College of Business Administration, 307 West Brooks, University of Oklahoma, Norman, OK 73019-0450; fax, (405) 325-1957; phone, (405) 325-3982; e-mail: rhoskiss@cbafac.ou.edu or Lorraine Eden, Department of Management, Texas A&M University, College Station, TX 77843-4221; fax, (409) 845-9641; phone, (409) 862-4053; e-mail: LEden@tamu.edu or Chung-Ming Lau, Department of Management, Chinese University of Hong King, Shatin, N.T., Hong Kong; fax, (852) 2603-5104; phone, (852) 2609-7803; e-mail, cmlau@cuhk.edu.hk or Mike Wright, Centre for Management Buyout Research, School of Management and Finance, University of Nottingham, Nottingham, UK; fax, 44-1159-515204; phone, 44-1159-515257; e-mail: IZMW1@lin1.smf.nottingham.ac.uk.

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Academy of Management JOURNAL

CONTENTS
Volume 40, Number 5, October 1997

From the Editor 1021

ARTICLES

Constructing Opportunities for Contribution: Structuring Intertextual Coherence and "Problematizing" in Organizational Studies
Karen Locke and Karen Golden-Biddle 1023

Decision Making in an Organizational Setting: Cognitive and Organizational Influences on Risk Assessment in Commercial Lending
Gerry McNamara and Philip Bromiley 1063

Alternative Approaches to the Employee-Organization Relationship: Does Investment in Employees Pay Off?
Anne S. Tsui, Jone L. Pearce, Lyman W. Porter, and Angela M. Tripoli 1089

A Meta-Analysis of the Effects of Organizational Behavior Modification on Task Performance, 1975–95
Alexander D. Stajkovic and Fred Luthans 1122

RESEARCH NOTES

The Importance of Collaborative Know-How: An Empirical Test of the Learning Organization
Bernard L. Simonin 1150

Financial Consequences of Employment-Change Decisions in Major U.S. Corporations
Wayne F. Cascio, Clifford E. Young, and James R. Morris 1175

The Effect of Ethical Frameworks on Perceptions of Organizational Justice
Marshall Schminke, Maureen L. Ambrose, and Terry W. Noel 1190

Integrating Justice Constructs into the Turnover Process: A Test of a Referent Cognitions Model
Karl Aquino, Rodger W. Griffeth, David G. Allen, and Peter W. Hom 1208

Measuring Beliefs: Accept No Substitutes
Lívia Markóczy 1228

Further Remarks on Retrospective Accounts in Organizational and Strategic Management Research
Brian R. Golden 1243

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FROM THE EDITOR

As we near the end of 1997, I wish to report on an exciting change that is about to occur for all the Academy publications. Beginning in 1998, *AMJ* will have a new look. All three journals published by the Academy of Management will move to a larger, more standard size, a different weight paper, and a double-column format. The three journals will be typeset and printed by a new printer, Cadmus Journal Services. This change is part of the integrative effort to accelerate the movement to a completely electronic publishing environment, to develop a standard "corporate look" for our three journals, and to realize some cost savings. We are moving toward electronic publishing, and our authors are already submitting their accepted papers on disk. We anticipate that we will be requesting initial submissions on disk in the not-too-distant future. This also implies that we soon will be reviewing manuscripts electronically as well as editing the final papers on disk. Clearly, the electronic age is upon us and, cautiously but surely, we are working toward fuller and better use of electronic technology in our publication process.

Now I wish to share a second piece of exciting news. I reported in the June 1997 issue (when I introduced 7 new members of the *AMJ* Editorial Board) that I would be adding more new members to the board. I am most pleased to announce that 18 ad hoc reviewers will be joining the *AMJ* editorial review board. Their names are indicated with an asterisk (*) on the list of board members on the masthead page in this issue. They all have performed outstanding reviews for the *Journal* and have shown strong commitment to contributing to the development of the field through their reviews. Please join me in welcoming them to the editorial review board.

The December issue will mark the end of the 40th year since the *Academy of Management Journal* came into being. Please stay tuned for a special anniversary section in the sixth issue of volume 40 of *AMJ,* which also will be the last issue with the current look.

Anne S. Tsui
Hong Kong

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CONSTRUCTING OPPORTUNITIES FOR CONTRIBUTION: STRUCTURING INTERTEXTUAL COHERENCE AND "PROBLEMATIZING" IN ORGANIZATIONAL STUDIES

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Examining a sample of journal articles, we develop a grounded theory of contribution that shows how organization studies theorists textually construct opportunities for making contributions to the field. The analyses reveal two major processes and the associated rhetorical practices that texts invoke in establishing opportunities for contribution. The study's findings point to the richness of contribution by illuminating how uniqueness claims are textually produced and legitimated in the context of science. The construction of contribution in organization studies is more complicated than has been assumed.

What constitutes a scientific contribution in the field of organizational studies? How do authors construct contribution in their written work? Despite the centrality of the notion of contribution to the institution of science and the evident interest practitioners of science have in that notion, no empirical work has examined how scientific contribution in organizational studies is "inscribed" in written texts.

In this article, we begin the empirical investigation of how contribution is constructed in organizational studies. In doing so, we seek to develop a grounded theory of contribution by integrating and extending the traditions of others in the social sciences who have investigated scientific texts, especially those in the constructivist stream of the sociology of science (cf. Davis, 1971, 1986; Knorr-Cetina, 1981; Latour & Woolgar, 1979) and those who have incorporated a rhetorical perspective in the analysis of scientific texts (cf. Gephart, 1986, 1988; Gusfield, 1976; McCloskey, 1994). The present study focuses on the "situated" microprocess of language use in journal articles, the location of crucial public discourse among researchers (Winsor, 1993; Yearley, 1981; Zuckermann, 1987). It addresses three questions: (1) How do texts establish opportunities for contribution? (2) How do texts

The authors thank Jane Dutton, Ellen O'Connor, Hayagreeva Rao, Dvora Yanow, and the *AMJ* reviewers for their insightful comments on an earlier version of this article. Karen Golden-Biddle conducted this research while at Emory University.

signify the importance of a proposed contribution? and (3) What rhetorical practices are invoked to support the constructed opportunities for contribution? The analyses seek to uncover key processes that authors use in texts to establish opportunities for contribution.

CONTRIBUTION

Contribution in Organizational Studies

Over the years, organizational theorists have pointed to the importance of contribution and have focused primarily on novelty or uniqueness as a major component of what comes to be regarded as contribution (cf. Astley, 1985; Weick, 1989). A study by Mone and McKinley (1993) provided evidence that a "uniqueness value" does exist in organizational studies and that this value influences behavior. Defining the uniqueness value as a prescription that "organization scientists should attempt to make unique contributions to their discipline" (1993: 284), those authors showed how words such as "newness," "innovation," and "difference" are present in both archival materials—published editors' comments and review materials for journals and conferences—and articles that examine organizational studies. In particular, Mone and McKinley showed how these words are integrated into a variety of editorial comments that urge innovation (Weick, 1995), suggested that the number one question of reviewers about a work is, What's new? (Whetten, 1989), and encouraged the submission of manuscripts that "loosen the normal science straightjacket" (Daft & Lewin, 1990: 7).

There is also growing evidence to support the idea that a relationship exists between the uniqueness value, or novelty, and publication in organizational studies journals. Building on a major area of work in the sociology of science examining what influences the selection process in journal reviews, researchers have found that publication in organizational studies journals is more likely when novelty is present in manuscripts (Beyer, Chanove, & Fox, 1995; Cole & Cole, 1967; Crane, 1965, 1967; Zuckerman, 1987). For example, Kerr, Tolliver, and Petree (1977) found that manuscripts had a greater likelihood of publication when they provided significant tests of authors' new theories or developed content that was different from that traditionally published in the journal to which they were submitted. Recently, Beyer, Chanove, and Fox (1995) found evidence that, during the final decision-making stage of the review process, reviewers positively viewed articles when they were clearly written and, most interesting for our purposes here, when authors made explicit claims of novelty, disconfirming evidence, or both. In addition, the findings of this same study indicate that "the most important predictor of reviewers' recommendations was how they rated manuscripts' significance to the field, which was partially defined by originality" (Beyer et al., 1995: 1253).

Contribution is clearly important to the field of organization studies, and what counts as a contribution is that which is perceived as unique or novel in light of the extant literature. But, despite the attention paid to

establishing that contribution matters in scientific work, relatively little attention has been paid to what contribution means in practice, in the language used in written texts. How is contribution constructed in scholarly writing? How do texts create the opportunity for contribution? How does the uniqueness value get translated into practice through the writing of scientific texts? How is the case made that a given text provides something important?

Contribution as Socially Constructed

Focusing on the "how" of contribution is grounded in two major assumptions: the socially constructed nature of scientific knowledge and the active agency accorded texts. Recent work from quite different traditions provides evidence supporting these two assumptions. That scientific knowledge is socially constructed is an increasingly accepted idea among sociologists of science, especially those working in the constructivist stream (Knorr-Cetina, 1981; Latour, 1982; Latour & Woolgar, 1979; Zuckerman, 1987), as well as among some researchers in organizational studies (Astley, 1985; Burrell & Morgan, 1979; Daft, 1983; Weick, 1989). A socially constructed view of science suggests that knowledge cannot be known separately from the knower, because the content of knowledge is influenced by social practices and interactions, and because the determination of what ideas count as knowledge is a meaning-making activity "enacted" in particular communities. This view contrasts with an alternate view of science suggesting that knowledge is an objective entity that exists independent of the knower and whose import is self-evident (Knorr-Cetina, 1981; Winsor, 1993). In this view, the world is composed of facts, and the goal of knowledge is to provide a literal account (Knorr-Cetina, 1981) of that world in plain, unvarnished language (McCloskey, 1994).

The importance of this distinction for the present study is that in the latter view, the constituted character of knowledge and contribution remains unproblematic and taken for granted. In contrast, adopting a constructionist perspective "problematizes" contribution and renders it accessible to investigation. Accordingly, adopting this perspective implies seeking a reflexive understanding of science in which scientists not only inscribe findings, but also "accomplish the meaning of this accomplishment" (Knorr-Cetina, 1981). And this meaning—the import and relevance of the inscribed findings—is situated within the knowledge of the scientific community and, in particular, within the extant literature of the topic under investigation.

An idea becomes a contribution, then, when it is constructed as important by the members of a scholarly community, relative to the accepted knowledge constituted by the field's written work. That scientific contribution embodies novelty, and even surprise, vis-à-vis accepted knowledge was first noted by Davis (1971), in his classic work, "That's Interesting." Davis proposed that the "objective truth" of a theory has less to do with its impact than whether or not the theory is found interesting. His empirical analyses of "famous sociological theories" disclosed that interesting propositions de-

nied or negated accepted propositions by asserting that what seemed to be X was in reality non-X or that what was accepted as X was actually non-X. Similarly, in organizational studies, Weick noted that "the contribution of social science does not lie in validated knowledge, but rather in the suggestion of relationships and connections that had previously not been suspected" (1989: 524).

According active agency to texts is the second assumption of the present study. To accord agency is not to suggest that texts are independent actors. Rather, we assert that the intentions and meanings available in texts can be disclosed through examination (Gross, 1990; Winsor, 1993). Disclosing these meanings and specific textual practices is accomplished through rhetorical analysis.

Rhetoric is a traditional, language-based discipline concerned with logic, composition, argument, and style (O'Connor, 1996a, 1996b). The specific stream of research most relevant here is known as the rhetorical analysis of scientific texts (cf. Gephart, 1986, 1988; Gross, 1990; Gusfield, 1976; McCloskey, 1994; Selzer, 1993; Simons, 1990). In this work, rhetoric is most broadly construed in the Aristotelian tradition, as honest argument intended for an audience (McCloskey, 1994). This definition implies that as soon as scientists frame ideas for presentation to an identified audience, they are engaging in rhetoric.

Those conducting rhetorical analyses of science view scientific texts as data for examining the arguments or claims the texts make, including claims of contribution. The analyses incorporate not only the content of the claims, but also how they are supported and rendered credible in the texts. A central focus of this work is the identification of textual features and rhetorical practices that help to support the validity of the claims. For example, work has examined how rhetorical practices such as "next stepping" (Gephart, 1986, 1988), the implied authority of the scientist (McCloskey, 1994), "commonplaces" in arguments (Davis, 1986), "dramatism" (Gusfield, 1976, 1981), and arrangement in scientific articles (Knorr-Cetina, 1981) support and enhance the credibility of the arguments developed in texts. Furthermore, some work (Gephart, 1988; Gusfield, 1981; McCloskey, 1985, 1994) has used ironic analysis to illuminate how texts construct the appearance of realism or objectivity in conveying truth through their rhetorical practices.

The empirical analyses of science conducted within the constructivist and rhetorical streams of work offer insights that are relevant to the present study. First, these analyses place center stage the idea that scientific contribution is a constructed phenomenon. Second, the meaning of contribution emerges not from the presentation of brute facts (Gross, 1990; McCloskey, 1994), but rather from the development of honest claims to convey knowledge intended for academic audiences. In addition, scientific texts seek to persuade readers to view phenomena in a particular, and different, way. And finally, texts must relate to extant knowledge, negate accepted propositions, and invoke rhetorical practices to support their validity.

RESEARCH METHODOLOGY

Data Sample

To examine how opportunities for contribution are constructed, we went to two of organization studies' established, mainstream, and highly regarded journals, the *Academy of Management Journal* (*AMJ*) and *Administrative Science Quarterly* (*ASQ*). Both of these outlets have reputations for being very selective in their acceptance decisions and thus, we reasoned, they would also be selective in adjudicating what constitutes contribution. We selected one population of empirical work for analysis, qualitative case studies.

Between January 1976 and September 1996, 21 articles whose data and analyses were wholly qualitative were published in the *Academy of Management Journal.* We took January 1976 as our starting point because the *Academy of Management Review* was created as a separate journal in 1976, following a 1975 decision by *AMJ*'s editorial board to publish only empirical work in the *Academy of Management Journal.* During the same two decades, 61 such qualitative works were published in *Administrative Science Quarterly.* These 82 case studies[1] constitute our sample, and they reflect much of the variety in epistemological orientations and methodological approaches that fall under the compendious rubric of qualitative methods. For example, there are manuscripts reflecting philosophical orientations ranging from positivism (e.g., Ross & Staw, 1993) to postmodernism (e.g., Boje, 1995). Research approaches are similarly varied; they include critical hermeneutics (e.g., Phillips & Brown, 1993), semiotics (Barley, 1983), historical analyses (Kieser, 1989), and even use of a grounded theory approach for theory testing (e.g., Ross & Staw, 1993).

As Knorr-Cetina (1981), Latour and Woolgar (1979), and Medawar (1964) have pointed out, in a formal publication, opportunities for contribution are developed in its introductory paragraphs and pages—regardless of when during the research process the work's relationship to the existing body of work was specified. It is also in the introduction that the theoretical traditions in the form of extant literature are integrated most fully into the text. Accordingly, we focused on each article's introduction, which we defined as beginning with the first line after the abstract and continuing up to the methods section. Where no formal methods section existed, we considered the introduction as ending with the beginning of the empirical presentation. This sample's introductions ranged in length from 1 to 13 pages; on the average, they were 4½ pages long. In total, our data comprised 353 pages of published text.

Building the Theory

To develop the conceptual framework, we followed the procedures for building grounded theories outlined by Glaser and Strauss (1967) and sub-

[1] Table 5 lists the studies; full references for the sample are available from the first author.

sequently refined by them and by other scholars (Corbin & Strauss, 1990; Glaser, 1978; Martin & Turner, 1986; Strauss, 1987; Strauss & Corbin, 1990; Turner, 1981, 1983). Since our research focus was examining how formal scientific papers constructed opportunities for contribution, we began the process of building conceptual categories by inspecting the texts' introductory pages with an eye toward identifying their specific textual acts (Myers, 1993) and the rhetorical features associated with those acts.

Following the principle of constant comparison, as soon as we formulated a provisional textual act and its preliminary rhetorical practices, we compared the examples of the rhetorical practices in order to clarify the textual acts. At the same time, conceptualizing textual acts directed us to further examine the manuscripts for rhetorical practices that might be relevant and related to those acts. Finally, we grouped related acts and their practices into categories (Corbin & Strauss, 1990; Strauss & Corbin, 1996); for instance, the textual act of creating discord and the associated practices of making contentious characterizations and dichotomizing were grouped and labeled as "structuring noncoherence." As was the case with the formulation of textual acts, the creation of a category led us to further scrutinize the manuscripts in order to refine that category's properties and relationships. A key act in assigning meaning to these rhetorical practices was the explication of tiny details of language, such as the use of a particular word.

As we started grouping textual acts, we wrote theoretical memoranda, free-flowing, theorizing write-ups about emerging categories, textual acts, rhetorical practices, and their relationships to each other and to the question of contribution. These interpretive memos helped us to make sense of the complex of emerging practices and often pointed to areas where further analysis of the complete sample was needed (Glaser, 1978; Strauss, 1987; Turner, 1983). One early memorandum explored similarities and differences in rhetorical practices captured by acts that were then characterized as "legitimating"; this category's inability to adequately organize all the examples being coded indicated a need to reexamine how each of the manuscripts configured existing literature. Further, in an aside, the memo referred to "two things" the papers "do." A later theoretical memorandum articulated the "two key processes" that formed the cornerstone of our existing theory. This articulation again resulted in our returning to all the manuscripts to refine these processes, including the textual acts and rhetorical practices associated with them.

At the same time as we pursued theory building, we continued reading broadly to help us gain insights into the data (Glaser & Strauss, 1967; Strauss & Corbin, 1990; Turner, 1982, 1983). In this way, existing scholarly work was integrated with the developing model. For example, the concept of "intertext" (Bazerman, 1993; Culler, 1982; Kristeva, 1980) helped us think about how texts located themselves vis-à-vis existing works, and the concept of complication in literary studies helped us consider how texts established the significance of their proposed contributions.

Throughout the theory-building process, we spoke together frequently

to discuss the emerging textual acts, rhetorical practices, and categories, and their possible implications for contribution making. Differences of opinion invariably led us back to the manuscripts to clarify the textual acts and rhetorical practices that composed our categories and to resolve their properties.

CONSTRUCTING CONTRIBUTION OPPORTUNITIES: A GROUNDED THEORETICAL FRAMEWORK

How do organization researchers construct adequately justified opportunities for making contributions to knowledge? More particularly, how, through the medium of language, are such opportunities crafted? The framework we developed explicates two key processes manuscripts enact in order to construct claims that contribution opportunities exist and are warranted.

Our analyses disclosed that, in order to establish contribution, organization studies manuscripts first must re-present and organize existing knowledge so as to configure a context for contribution that reflects the consensus of previous work. The presence of existing knowledge legitimizes a research area by underscoring the intellectual resources devoted to it and, at the same time, provides a theoretical orientation for present investigations. Second, our analyses disclosed that manuscripts must in a sense turn on themselves, subverting or problematizing the very literatures that provide locations and raisons d'être for the present efforts. Showing that existing scholarly and research efforts are wanting in some respects opens up opportunities for advancing knowledge about topics of investigative concern.

These two processes speak to the tension between, on the one hand, authors' needing to relate present works to existing research programs so that the works' importance and relevance to the organization studies community are established and, on the other hand, needing to demonstrate that the works identify occasions for original contribution.

The First Process: Constructing Intertextual Coherence

The articles studied crafted networks of existing studies to constitute "literatures," as publications in reputable journals are expected to do. Each such network is conceptualized as an intertextual field. Describing an intertext as a "mosaic of quotations," Kristeva (1980: 66) and others (Bazerman, 1993; Culler, 1982; Gephart, 1993) underscored the embedded quality of texts, which means that a variety of other texts (and discourses) are reconstituted in any existing work. In this study, an intertextual field refers to the complex of other, related texts that constitute the literatures referenced by each article in our sample. Going beyond the embedded references, such an intertextual complex points back to the individual and collaborating researchers whose work is noted as relevant to a given study. These intertextual fields, then, are the publications' own reconstructions of appropriate literatures (Bazerman, 1993), including the ways in which particular cited works relate to each other and to the proposed studies. Following this logic,

we can say that each research study places itself in an intertextual field of its own making.

The cited works embedded in this sample's intertextual fields were linked together in particular ways, each reflecting the importance of consensus in constructing opportunities for contribution. Specifically, the articles revealed three intertextual coherences, which we variously characterize as synthesized coherence, progressive coherence, and noncoherence. Table 1 provides examples of each of these intertextual fields in our sample articles' introductions.

Synthesized coherence. Manuscripts display synthesized coherence when they cite and draw connections between works and investigative streams not typically cited together to suggest the existence of undeveloped research areas. Texts that synthesize coherence hint that researchers working in different domains are unmindful that their work points to common ideas that have not been explored. Existing studies and research programs are "written as" making available general ideas that, though present in the broad literature, have not been explicitly recognized and pursued. Thus, synthesized intertextual fields are organized to bring to attention to, and invent or reinvent as topics for inquiry, subjects that are implicit in other works. The intertextual fields accomplish this through three textual acts: (1) formulating overarching ideas that articulate and constitute the research areas, (2) constructing congruent relationships among different research domains to create common ground, and (3) reinterpreting previous work to show underlying consensus about the configured investigative ground.

We see the three textual acts and the associated rhetorical practices that synthesize research topics in the intertextual fields constructed in the quotations from Barley [1983][2] and Rafaeli and Sutton [1991] presented in column 1 of Table 1 (T1). Barley's excerpted text begins with the construction of congruent relationships among various research domains. As the lines "despite discrepant pragmatic aims . . . family resemblance" (T1: 2–5) show, the introduction first constructs congruency within a heterogeneous organizational culture literature. Using terms that underscore connection, such as "*family* resemblance,"[3] is a key rhetorical practice in the construction of congruent relationships among studies that otherwise might be viewed as unrelated. This practice is repeated when congruency is constructed between culture studies and work on organizational symbolism. The text characterizes studies in these two literatures as "intellectually *akin*," and it further pulls these two bodies of work together by describing them as a "*collection* of texts" (T1: 28, 34).

At the same time that Barley's introduction constructs congruent rela-

[2] We use brackets to distinguish the articles that are part of our sample from all the other cited works in this section. Where an excerpt in a table is cited, the numbers after a colon are line numbers. Where a publication year is cited, the numbers after the *second* colon refer to lines on the page being cited.

[3] All emphases are added.

TABLE 1
Structuring Intertextual Fields: Examples of the Three Types of Coherence[a]

Synthesized Coherence	Progressive Coherence	Noncoherence
Barley [1983: 393; *ASQ*] Despite discrepant pragmatic aims, and regardless of nuances in definition, organizational theorists who write about organizational cultures repeatedly employ key terms that bear a family resemblance. Martin (1982), Siehl and Martin (1981), Wilkins (1980), Pettigrew (1979) and Dandridge, Mitroff and Joyce (1980) all suggest that culture is embodied in and transmitted by "stories," "myths," and "symbols" and urge researchers to scrutinize such vehicles more closely. Schein (1981, 1983) and Dyer (1982) look for culture in patterns of "assumptions" that they hold to underlie symbolic vehicles, while Schwartz and Davis (1981) prefer the term "expectations." Van Maanen (1976, 1977, 1983) and Louis (1983) frequently write of culture as a set of shared "understandings" "interpretations," or "perspectives" by which members of a group are able to articulate contextually appropriate accounts. From the observation that this family of terms is repeatedly associated with the notion of culture, one may infer that in organization studies "culture" is somehow implicitly tied to notions of social cognition and contextual sense making. The growing interest in organizational cultures should not be seen as . . . a small movement . . . . Rather, from a thematic point of view, the topic is intellectually akin to a simultaneously growing literature that does not speak of "culture" per se, but that nevertheless ponders how members of organizations symbolically create an ordered world (e.g., Meyer and Rowan, 1977; Pondy, 1978; Morgan, 1980; Mitroff and Mason, 1981; Pfeffer, 1981). As a collection of texts, both bodies of work, and even the rising popularity of the term "culture" itself, seem to signify readiness on the part of scholars and the public alike to	**Bartunek [1984: 355; *ASQ*]** Organizational theory addressing the causes of organizational structure has traditionally focused primarily on the organization's size, technology, and environment (cf. Ford and Slocum, 1977; Hinings, 1979; Bobbitt and Ford, 1980). Considerable attention has been paid to ways these features directly determine organizational design. Recently, it has been argued that size, technology, and environment do not have a direct effect on structure. Rather, these features affect structure through the mediation of powerful organization members who perceive and enact them in various ways and then translate them into structure decisions (Montanari, 1978; Bobbitt and Ford, 1980; Ranson, Hinings and Greenwood, 1980; Draft and Weick, 1984). The focus of this approach has been more on organization members' understandings than on external organization factors themselves. For example, Bobbitt and Ford (1980) suggest that an administrator's decision to restructure depends on the administrator's cognitive and motivational orientations; size, technology, and the environment act primarily as constraints. Ranson, Hinings, and Greenwood (1980) proposed that one of the factors that most affects an organization's structure is powerful organizational members' "interpretive schemes" and the expression of these in "provinces of meaning." The relationship between interpretive schemes and structure, and especially between changing interpretive schemes and restructuring, is the focus of this paper. **Mintzberg and Waters [1982: 465; *AMJ*]** In the literature, strategy always has been defined in terms of intentions, guidelines for the future—essentially in terms	**Langton [1984: 330; *ASQ*]** Bureaucracy has become, within the last century or so, 'the primary institutional characteristic of highly complex and differentiated societies" (Landau, 1972: 176) . . . . If "bureaucracy . . . epitomizes the modern era" (Blau & Meyer, 1971: 10) and if "the bureaucratization of life" has been in fact "the greatest revolution of all" (Lindblom, 1977: 244, 27–29), then explaining the rise and proliferation of bureaucratic organizations can be regarded as perhaps the central task confronting social scientists. Unfortunately the relevant literature offers contradictory assessments of the ability of the social sciences to account for these phenomena. On the one hand, we are told that "Max Weber was the first to consider bureaucracy as the problem of industrial society" (Jacoby, 1973: 147), that he articulated the "classical theory of bureaucracy" (Blau, 1970: 14), and that this theory . . . remains the dominant paradigm for the study of administration . . ." (Rudolph and Rudolph, 1979: 195; Ouchi, 1980: 401–402). All this clearly conveys the impression that Weber's work on bureaucracy constitutes, as Landau (1972: 154) explicitly argued, "a paradigm in Kuhn's sense." On the other hand, this same literature contends that all theories of bureaucracy, including Weber's, are "underdeveloped" (Heiskanen, quoted in Abrahamson, 1977: 36). Indeed, many analysts (e.g., Haas and Drabeck, 1973) have suggested that the study of bureaucracy and formal organizations exhibits precisely the eclectic and unfocused character of a field of inquiry that has failed to produce a dominant paradigm, in Kuhn's sense.

TABLE 1 (continued)

Synthesized Coherence	Progressive Coherence	Noncoherence
consider the proposition that organizations are speech communities sharing socially constructed systems of meaning. **Rafaeli and Sutton [1991: 749–750; *AMJ*]** The view that organization members routinely use expressed positive emotions as tools of social influence is ubiquitous in organizational behavior. This theme is implicit . . . in literature on considerate leaders (Bass, 1981), charismatic leaders (Conger, Kanungo, & Associates, 1988), social support (House, 1981), and ingratiation (Kipnis, 1984; Kipnis & Schmidt, 1983). It is explicit in recent work on expressed emotions as role requirements. Despite wide variance in the perspectives these authors have taken there is (albeit often implicit) agreement that expressed positive emotions are a tool of social influence because encounters with a friendly person are positively reinforcing. A more modest body of evidence suggests that organization members sometimes use expressed negative or unpleasant emotions as tools of social influence. . . . Research on strong influence tactics has indirectly examined the use of negative emotions to influence others. These tactics include expression of hostility and irritation (Kipnis, 1984; Kipnis & Schmidt, 1983). Popular business periodicals have reported that some leaders routinely express negative emotion in their efforts to motivate subordinates, providing further indirect evidence.	of plans. Chandler's definition is typical: "the determination of the basic long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals" (1962, p. 13).	**Yan and Gray [1994: 1478–1479; *AMJ*]** International joint ventures are a rapidly growing organizational form that has received increasing interest from researchers. . . . Previous studies have reported high failure and instability rates among joint ventures (Franko, 1971; Harrigan, 1986; Kogut, 1989; Levine & Byrne, 1986), and the factors predictive of successful venture performance remain unclear (Geringer & Herbert, 1991; Parkhe, 1993a). In addition, the empirical studies that have been done to test existing conceptual models have either produced contradictory results or been difficult to compare because of differences in how variables were measured. This study adopts an interpartner negotiations perspective on joint venture formation. . . . According to the negotiations perspective, the relative bargaining power of each joint venture partner shapes the pattern of management control that a venture adopts. In addition, parent control is hypothesized to be a critical factor that determines performance. Although previous researchers have empirically investigated the first relationship (Blodgett, 1991; Fagre & Wells, 1982; Killing, 1983; Lecraw, 1984), the studies are difficult to compare because they have measured both variables differently. Research findings on the relationship between control and performance offer conflicting results (see Geringer and Herbert [1989] for a review). Lecraw (1984) noted that the relationship between parent control and performance generates continuing controversy in the international joint venture literature.

[a] *ASQ* = *Administrative Science Quarterly*. *AMJ* = *Academy of Management Journal*.

tionships, it formulates the topic of concern identified in its complex of studies in general terms. Rhetorically, the practice of characterizing these literatures in thematic terms ("from a *thematic* point of view" [T1: 27]) helps the text to present itself as surfacing a general idea for investigation. Finally, and perhaps most interestingly, this introduction synthesizes an intertextual field by demonstrating as yet unexpressed consensus as to the presence of a topic in existing scholarly efforts. This is accomplished through the rhetorical practice of reinterpreting that work to surface underlying congruencies in findings or theoretical perspectives. Barley thus writes of the organizational symbolism literature that although it "does not speak of 'culture' per se . . . [it] nevertheless ponders how members of organizations symbolically create an ordered world" (T1: 29–31).

Rafaeli and Sutton's [1991] opening sentences (T1: 41–44) clearly initiate the formulation of a general idea about compliance and the expression of contrasting emotions via thematic characterizations of the studies that follow. A coherent idea is suggested through phrases like "the *view*" and "this *theme.*" The text then goes on to construct two major groups of cited articles, one that demonstrates latent consensus as to the influence wrought by the expression of positive emotions and another that underscores underlying agreement about the influence brought about by the display of negative emotions. In this introduction, the presented studies are repeatedly reinterpreted to highlight that they reflect this consensual position. For example, the excerpt's first paragraph notes that this subject is "*implicit*" in three different literatures (T1: 44–48). In the second paragraph, the authors again create unexpressed consensus by pointing out that "despite wide variance in the [three] perspectives . . . there is (*albeit often implicit*) *agreement* that expressed positive emotions are a tool of social influence" (T1: 50–53). This rhetorical practice continues in the third paragraph, where consensus as to the influencing impact of negative emotions is traced in studies that concerned other issues: "Research on strong influence tactics has *indirectly* examined the use of negative emotions" (T1: 58–60).

Although Rafaeli and Sutton's introduction does not explicitly draw connections between divergent streams of work, congruency between various streams is suggested by juxtaposing them. For example, literatures on leadership, social support, and ingratiation are set in relationship to each other within a single sentence (T1: 44–48). And experimental investigations of strong influence tactics and the popular press's accounts of certain leaders are embedded together under the general idea that negative emotions bring about compliance (T1: 58–65).

The construction of synthesized coherence in manuscripts' intertextual fields is thus achieved through a number of rhetorical practices: *Forming thematic characterizations* is the first of these rhetorical practices. Like the examples discussed above, other texts point to potential fields of study through the use of such thematic characterizations as "We employed the *idea* that organizations have identities . . . that influence how individuals interpret issues [Dutton & Dukerich, 1991: 518: 21–23] and "The *notion* that

organizations have strong norms . . . is the central *theme* of an emerging body of research" [Sutton, 1991: 245: 1–3]. This practice supports the notion that a text is suggesting that a general idea is available for consideration from available works.

Making connections between divergent literatures is the second rhetorical practice that constructs synthesized coherence. The textual practice of linking different investigative streams or varied studies helps a text assert that a coherent investigative domain can be identified. Further illustrations of how articles achieve this are the following: "Family theorists and therapists and organizational theorists and consultants *share* many concepts. *Each field* has been profoundly influenced by. . . . *Each is* interested in. . . . *Both* have developed. . . ." [Hirschhorn & Gilmore, 1989: 18: 11–18] and "*Many scientists see* the world dualistically, *as did* C. G. Jung . . . the viewpoint goes back to Chinese Taoism . . . to Goethe with his idea of polarities and . . . to Hegel's dialectic method" [Broms & Gahmberg, 1983: 484: 5–11]. Words such as "share," "each," "both," and "as did" textually create coherence amongst the disparate streams presented.

Reinterpreting existing work to show underlying consensus is the third synthesized coherence practice. Time and time again, the intertextual fields that structured synthesized coherence reinterpreted existing studies to demonstrate unrecognized consensus. By doing so, they supported the articles' assertions that sufficient evidence existed to warrant investigation of a phenomenon. Examples of the rhetoric of reinterpretation are seen in comments such as "Caregiving organizations may be understood in terms of . . . This frame *makes explicit what is implicit* in the job burnout literature" [Kahn, 1993: 540: 28–34], "Existing writings hint that such an integration might be useful" [Elsbach & Sutton, 1992: 701: 3], and "In both [studies] authors *were primarily interested in. . . . Nevertheless* both studies are of considerable interest to the student of intermediary organizations" [Lammers, 1988: 441: 36–41]. The point is not that these introductions fraudulently re-present existing studies. Rather, the reinterpretations written into their introductions suggest that although there is not a recognized body of work on the topics of interest, a critical mass of evidence and arguments can be gleaned to legitimately configure the topics for investigation.

Before we conclude this section, it is worth noting that there are two patterns of synthesized coherence. One pattern involves the organization of quite discrepant references. It is exemplified in the Rafaeli and Sutton [1991] and Brohms and Gahmberg [1983] excerpts already discussed. It is also clearly expressed in Sutton's [1991: 246: 45] introduction, which characterizes its intertextual field as reporting "*bits and pieces* of evidence" on how organizations try to maintain the expression of desirable emotions in light of actors' inner feelings.

The second pattern entails the creation of intersecting areas between two or more acknowledged and developed research programs. Illustrations include Barley's [1983] integration of studies of culture and symbolism, Elsbach and Sutton's [1992] blending of institutional theory and impression

management literature, and Hirschhorn and Gilmore's [1980] combination of references on structured family therapy and organizational change.

Progressive coherence. Whereas synthesized coherence points to researchers, working in disparate domains, whose works contain as yet undisclosed points of intersection, progressive coherence indicates networks of researchers linked by shared theoretical perspectives and methods working on research programs that have advanced over time. Thus, two acts—the depiction of cumulative knowledge growth and the construction of consensus among researchers—point to developed and focused lines of inquiry. And various rhetorical practices support each of these acts.

Column 2 of Table 1 provides examples of progressively coherent intertextual fields in Bartunek [1983] and Mintzberg and Waters [1982]. Bartunek's introduction begins with the construction of two consensual positions among researchers as to the cause of organizational structure. The first paragraph points to researcher commitment to external organization factors, and the second, to organization members' sense-making. The practice of using dense citations to support the two research focuses, the size, technology, and environment position (T1: 3–6) and the member understanding position (T1: 15–17), indicates that these are widely shared perspectives on organizational structure.

At the same time that Bartunek's text constructs consensus among researchers, it presents cumulative progress in the study of this topic. For example, Bartunek's opening statements suggest cumulative progress via three rhetorical practices. First, the text explicitly references the time devoted to this domain: "Theory addressing the causes of organizational structure has *traditionally* focused. . . . *Recently,* it has been argued" (T1: 2–9). Second, by serializing studies or groups of studies (noting the external factors studies, then the sense-making studies), the text invokes a sense of advancement in the study of causes of organizational structure. Serializing is also evident in the presentation of the sense-making perspective. Beginning with "for example, Bobbit and Ford (1980) suggest" (T1: 19–24) and moving on to "Ranson, Hinings, and Greenwood (1980) proposed" (T1: 24–29), Bartunek's text portrays one development after another in the investigation of the phenomenon. In this way, successive researchers are shown contributing to a growing understanding of the relationship between interpretive schemes and structure. Finally, in addition to supporting the construction of consensus, the practice of citing densely also hints at progress by emphasizing that significant research efforts have been devoted to a topic.

Even though the progressive intertextual field constructed in Mintzberg and Waters [1982] is rather terse, it nevertheless displays rhetorical practices that invoke the construction both of cumulative progress and of consensus. For example, time is indexed in the statement "In the literature, strategy *always* has been defined" (T1: 34). "Always" is a long time, and the word suggests considerable work on this topic. In addition, characterization of Chandler's definition as "*typical*" (T1: 36–37) makes a case for strong agree-

ment among researchers as to the nature of strategy because it is depicted as representative of other definitions.

The construction of progressive coherence in manuscripts' intertextual fields, then, is achieved by a number of rhetorical practices that work to suggest that the complex of cited studies represents ongoing and cumulative progress in an investigative domain and that the domain reflects a high degree of researcher consensus. Cumulative progress is suggested by these rhetorical practices: *Referencing time devoted to a topical area* is the first. Indeed, as the examples above suggest, the introductions of scholarly articles often "write time into" their presentation of the literature. Often, time appears in phrases prefixing the discussion of literatures. "Over the past 15 years" [Ross & Staw, 1993: 702: 4], "In recent years" [Burgelman, 1993: 223: 5], and "Although early studies" [Prasad, 1993: 1400: 3]. At other times, time is woven throughout the presentation of literature to create a history of the topic. The following excerpt is exemplary:

> The premise that many relationships are important to development has a *long and rich history* (Neugarten, 1975; Storr, 1963; Sullivan, 1953). *Over the years,* social psychologists have enriched the idea that.... *Most recently,* Levinson et al. (1978) developed a concept of the life structure [Knorr & Isabella, 1985: 111: 30–38].

In this way, the texts present existing work as showing the development characteristic of established research domains.

Serializing contributions is a second rhetorical practice promoting progressive coherence. The practice of serializing contributions signals maturity and development in an area by implying a history of studies that constitute the development of a field. Consider this example:

> Researchers have attempted to identify the stimuli that trigger adaptive behaviors and have seen change as a product of such influences as organizational structure (Hummon, Doreian and Teuter, 1975), growth and aging (Labovitz and Miller, 1974), technological innovation (Bell, 1973), environmental changes (Sherwood, 1976), constituency changes (Mazmanian and Lee, 1975), leadership style (Meyer, 1975), and the dissatisfaction of the deprived (Benson, 1973) [Eiggart, 1977: 410: 3–11].

Note how this example invokes maturity and progress by showing the complexity and variety of influences that research has identified on the triggers of organizational change behavior.

Constructing dense citations is the third progressive coherence rhetorical practice. Development and maturity in a field are also suggested by the practice of constructing dense citation lists. By listing study after study, the following examples emphasize the intellectual resources that have been devoted to a topic:

> [Organizational theorists] have actually examined the order and structure or specific interpretations through cognitive maps, prototypes, and scripts (Blackburn & Cummings, 1982; Bougon, Weick, & Binkhorst, 1977; Jolly, Reynolds, & Slocum, 1988;

> Lord, Foti, & DeVader, 1984; Walker, 1985; Walton, 1986) [Isabella, 1990: 9: 9–16].
>
> A substantial literature has emerged on the relationships between strategy, structure, degree of diversification and economic performance in the divisionalized firm (Chandler, 1962; Williamson, 1970; Wrigley, 1970; Galbraith and Nathanson, 1979; Caves, 1980) [Burgelman, 1983: 223: 5–10].

In addition to cumulative progress, the textual construction of consensus among groups of researchers is also necessary to achieve progressive coherence. Rhetorically, this is supported by the practice of *stating agreement.* As was evident in the Mintzberg and Waters [1976] example, explicit agreement among researchers is portrayed in phrases like "Theorists largely *agree* that individual power" [Biggart & Hamilton, 1984: 540: 1], "Scholars have converged on a *common* vision of how American managerial thought has evolved" [Barley & Kunda, 1992: 363: 31–33], and "Virtually *every* empirical study of management time allocation draws attention to" [Gronn, 1983: 2: 7–8]. Of course, the widespread use of qualifiers intimates that this agreement, though "large," may not be unanimous.

Using citations to indicate the existence of shared perspectives also supports progressive coherence. In addition to making explicit statements that agreement exists, using multiple citations to support theoretical positions achieves the presentation of consensual positions. The textual fact that many researchers hold a view highlights the security of understanding that an area of inquiry has achieved. The following excerpt further makes the point:

> Adherents of the . . . approach see it as fundamentally an individualistic factor lodged in the personal costs, benefits, and intrinsic rewards inherent in work (Canter, 1968; Porter and Steers, 1982; Buchanan, 1974; Locke, 1976; Kalleberg, 1977; Mowday, Porter and Steers, 1982; Oliver, 1984; Lincoln and Kalleberg, 1986) [Adler & Adler, 1988: 401: 26–31].

Like synthesized coherence, progressive coherence indicates a variation in patterning. We do not see only the linear lines of inquiry evident in such articles as Bartunek [1984], Thomas [1993], Crozier and Thoenig [1976], and others. Interestingly, a few of the manuscripts embed in their intertextual fields lines of inquiry that are framed in divergent terms, perhaps warranting further nominal specification as progressive-divergent. For example, quite divergent approaches to the study of succession are embedded in Gephart's [1978] intertextual field. They are construed in the following way:

> Organizational succession can be studied using a *variety* of theoretical perspectives and research methodologies. Such perspectives are often *complementary,* with each theory and/or method shedding light on specific aspects of succession. These studies can be typified in terms of *two rather distinct approaches.*
>
> The more common approach involves . . . testing hypotheses relating to . . . correlates of organizational succession.

> This approach has generated numerous insights. However, . . . it has certain limitations.
>
> A second approach to the study of succession involves analysis of specific cases, focusing on the effects of succession on the organization. Studies included in this approach are those by Christensen (1953), Gouldner (1954) . . . [Gephart, 1978: 554–555: 12–6].

In the above excerpt, then, we find the construction of two lines of inquiry, one consistent with a more situated ethnomethodogical analysis of the sense-making practices that produce succession and a second concerned with identifying the factors that correlate with succession using more quantitative methods. Although the clear distinctions between the two investigative streams could be construed as an intertextual field approaching noncoherence, they remain consistent with progressive coherence because they are presented as divergences that are "complementary," as bringing requisite "variety" to an investigative arena, and they are not constructed in opposing terms. Similarly, Ross and Staw's introduction begins its presentation of the literature in the following terms: "In recent years, three *rather independent* lines of research have addressed the issue of whether (and under what circumstances) individuals become overly committed to escalation situations" [1986: 274: 36–38]. This divergence then points to branching lines of inquiry or complexity within particular investigative domains.

Noncoherence. In noncoherent intertextual fields, we find referenced works that are presented as belonging to a common research program but as linked by disagreement. In contrast to the previous two intertextual fields, in which the construction of consensus is figural, here the key textual action is the construction of discord, albeit among researchers who agree on the importance of a research domain. In column 3 of Table 1, we provide examples of introductions in which noncoherent intertextual fields are constructed in the introductions by Langton [1984] and Yan and Gray [1994]. The presentation of discord is achieved through a number of rhetorical practices that work to depict a contentious and, by implication, confused body of research and group of researchers.

Look at how Langton's introduction achieves the depiction of discord. After highlighting the importance of bureaucracy in its opening paragraph, the text explicitly characterizes the state of understanding of this domain in contentious terms, claiming that "the relevant literature offers *contradictory* assessments" (T1: 12–14). It then depicts disagreement and challenges among researchers in its second and third paragraphs: "*On the one hand, we are told* that. . . . *On the other hand,* this same literature contends that" (T1: 14–27).

Yan and Gray's text also uses these two practices to construct dissent in the understanding of international joint ventures. Both paragraphs in their excerpted introduction portray internal challenging, asserting that "empirical studies . . . have either produced *contradictory* results or been difficult to compare" (T1: 43–47) and "Research findings on . . . control and perfor-

mance offer *conflicting results*" (T1: 59–61). And this introduction ends by suggesting ongoing contention in the investigative area by noting that there is "*continuing controversy*" in the literature (T1: 63–65).

In summary, noncoherent intertextual fields are achieved through the construction of discord, with the body of work relevant to investigative domains presented as contentious and disjointed. This construction is achieved by several rhetorical practices: *Making contentious characterizations* is the first practice supporting noncoherence. Research domains in the noncoherent articles we examined were characterized in contentious terms by phrases like "*rather than producing a consensus*" [Meyerson, 1994: 628: 22–23], "*non consensus*" [Holm, 1995: 398: 2–7], "*competing explanations*" [Bills, 1987: 202–203: 37–2], "major *controversy*" [Gersick, 1995: 10: 31], and "*depressing disputes*" [Riley, 1983: 414: 23–24]. Such language clearly invokes general images of investigative discord.

Differentiating internal challenges, the textual practice of portraying organization scholars as pitted against each other, is expressed in a variety of terms. Gersick's [1995] study constructs "*opposing camps*" of researchers on the organizational adaptability issue, locating a group of researchers in each: "One camp associated with theorists such as. . . . Theorists such as . . . anchor an opposing camp, arguing. . . ." [1995: 10: 31–42]. Similarly, in their introduction Wiewel and Hunter wrote this: "A hypothesis has been confirmed empirically (Carroll and Delacroix, 1982; Freeman, Carroll, and Hannan, 1983)" [1985: 482: 25–33], only to follow that up with "Meyer and Webster (1983) [raising] *questions*" [1985: 482: 25–33] about their findings. Contention is emphasized by naming the specific scholars or groups of scholars that disagree.

In addition to the above two practices, the construction of discord is achieved by negating findings, the practice of recording researchers' outright negation of existing findings and approaches. Thus, statements like "Legal scholars have provided compelling arguments that the initial separation of ownership and control was *not* the inevitable consequence of large-scale enterprise, as portrayed by Berle and Means" [Davis & Thompson, 1994: 141: 35–37] portray researchers nullifying each other's work. Similarly, Gregory asserted that "applying this anthropological approach in corporations leads one to study . . . *not only* myths" [1983: 359: 20–28]. And Anderson's introduction states "In this view, organizational action is *not* the result of the intellectual processes implicit in the task description" [1983: 201: 25–27].

Finally, the rhetorical practice of *dichotomizing theoretical perspectives* in an area of study is a fourth way in which discord among researchers is constructed. Dichotomizing underscores dissent by identifying researchers' views as diametrically opposed. This practice is reflected in comments such as "Although the *dichotomy* is not exact, two major research traditions are emerging, the *functionalist* approach and the *interpretive* approach" [Riley, 1983: 414: 25–27]. Perhaps the most interesting examples of this practice are provided by those texts in which the textual process of creating the dichotomy is visible. For example, Pinfield's [1986] introduction in the do-

main of organizational decision making begins by noting a qualified difference between two perspectives but ends by labeling a dichotomy:

> Mintzberg and his colleagues (1976) argued that completed strategic decision processes follow a structured process. . . . In *partial contrast* to the above perspectives is that of Cohen, March, and Olsen [Pinfield, 1986: 366: 4–9].

After describing the perspectives as "in *partial* contrast" to each other, the text then goes on to establish the dichotomy thus: "The first of these views will be labeled the '*structured*' perspective . . . the second view will be labeled the '*anarchic*' perspective" [Pinfield, 1986: 366: 40–43]. The introduction then proceeds to elaborate on the differences between the "structured and anarchic perspectives." In a similar fashion, Pentland's text on organizational knowledge characterizes as a "*mind-body*" dichotomy researchers' various focuses on "cognition in particular domains" and on "organizational routines" [1992: 527].

Table 2 summarizes the textual acts and associated rhetorical practices that create each of the three forms of intertextual coherence we have discussed in this section.

The Second Process: Problematizing the Situation

The process of structuring an intertextual field sets the scene for a contribution to be made through the interplay of an extant literature and a current study. In this respect, the process situates the opportunity for contribution within a particular construction of an intertextual field. The second process both relies on and complicates this scene. That is, the process of problematizing the situation calls into question the particular intertextual field that is established to locate a work. Through the process of problematization, then, a text attempts to signify how much the offered contribution matters. And, in doing so, it seeks to establish the contribution's importance and relevance to readers.

The analyses of the sampled publications disclosed three ways to problematize an intertextual field, which we conceptualize as incompleteness, inadequacy, and incommensurability. We use the prefix "in-" intentionally to express the negation, even subversion, of some aspect of the extant intertextual fields. Seeing the three means of problematizing as a continuum, as we move from incompleteness through inadequacy and on to incommensurability, we find increasing negation and upheaval. Table 3 provides examples from our sample of each of the three different ways of problematizing a literature. We incorporate and analyze these excerpts in the following discussion of problematization. In addition, we refer to Table 4, which details the textual acts and particular rhetorical practices associated with the three ways of problematizing.

Incompleteness. When problematizing a literature as *incomplete,* a text claims both that the extant literature is not finished and that the present study will further specify it. An incompleteness problematization assumes that a contribution can be made to an extant intertextual field by developing

TABLE 2
Process 1: The Textual Acts and Rhetorical Practices That Construct Intertextual Coherence

Form of Intertextual Coherence	Textual Acts	Rhetorical Practices
Synthesized coherence	Formulate general ideas (*by*)	forming thematic characterizations (*e.g., the notion*).
	Construct congruent relationships (*by*)	writing connections between divergent literatures (*e.g., literature 1 and literature 2 share many concepts*).
	Demonstrate latent consensus (*by*)	reinterpreting work to show underlying consensus (*e.g., implicit in the literature*).
Progressive coherence	Construct cumulative progress (*by*)	referencing time devoted to a topical area (*e.g., during the past decade*),
		serializing citations to imply time devoted to a domain (*e.g., author 1 found that . . . author 2 extended this work by . . . author 3 discovered*),
		citing densely to underscore effort devoted to a domain (*e.g., a substantial literature* [*multiple cites*]).
	Construct consensus among researchers (*by*)	stating agreement (*e.g., there is considerable agreement*),
		using citations to indicate existence of shared perspectives (*e.g., the literature . . . in general suggests . . .* [*multiple cites*]).
Noncoherence	Construct discord among researchers (*by*)	making contentious characterizations (*e.g., a major controversy*),
		differentiating internal challenges (*e.g., one camp . . . an opposing camp*),
		negating findings (*e.g., organizational action is not the result of*),
		dichotomizing approaches (*e.g., it has been treated either as an objective or subjective phenomenon*).

it further; the problematizing identifies where further specification is needed. Thus, the textual act of specifying the gap emerges as the hallmark of an incompleteness problematization.

The examples excerpted from Turner [1976] and Kram and Isabella [1985] in column 1 of Table 3 (T3) illustrate how texts specify gaps in an extant literature. The text by Kram and Isabella [1985] situates itself in the mentoring literature (T3: 2–12). It then (T3: 12–13) complicates this literature by incorporating the notion of "*other* adult relationships," implying that a mentoring relationship is but one of many relationships in work settings important for individual growth. Near the end of the introduction, with the sentence "Yet . . . life and career" (T3: 17–21), the text fully specifies the gap in understanding about relationships. In this one sentence, and through the use of the conjunction "yet," the text not only situates the present work and problematizes the situation, but also foreshadows what the study will be about. Finally, the text discloses the study's proposed contribution when it suggests that "a first step" in examining these other relationships "is a systematic study of the nature of relationships with peers" (T3: 23–26). Note how the text conveys the contribution with humility in the phrase "a first step" and also signals that the study will comply with scientific norms through the use of the word "systematic."

The text by Turner [1976] situates itself in the broadly defined literature of "organization and environment" and the study of "uncertainty" (T3: 30–36). The problematizing of this literature then occurs:

> The central difficulty . . . lies in discovering which . . . problems facing an organization are prudent to ignore and which should be attended to, and how an acceptable criterion of safety can be established as a criterion for carrying out this exercise (T3: 37–42).

The text then simultaneously relies on and extends Wilensky's insight about "failures of foresight" and thereby foreshadows what this study concerns (T3: 42–50). The text will "take up" Wilensky's suggestion to examine the conditions that foster the failure of foresight and use official inquiries into British public disasters to do so. Finally, near the end of the first section, the text completes the specification of the gap:

> The main purpose of the present research, however, is not to produce a general theory of such disasters . . . , but to use them as a paradigm for understanding organizational failures of insight, which also in their way are disastrous (T3: 53–58).

This text also conveys the offered contribution with humility yet signals the importance of the subject.

What is interesting about these examples is that the textual act of "specifying the gap" includes, but does not stop with, invoking the rhetorical practice of identifying lacunae in the extant literature. If the main textual act is to specify the gap, then the way texts accomplish this act includes, but goes beyond, simply identifying lacunae. The above examples also foreshadow how the study will fill the lacunae, politely address extant literature,

TABLE 3
Problematizing Situations[a]

Incompleteness	Inadequacy	Incommensurability
Kram and Isabella [1985: 110–112; *AMJ*] Both adult development and career theorists have described the mentoring relationship as having great potential to enhance the development of individuals in both early and middle career stages (Dalton, Thompson, & Price, 1977; Hall, 1976; Levinson, Darrow, Klein, Levinson, & McKee, 1978). Studies of this relationship suggest that it can be instrumental in supporting both career advancement and personal growth (Clawson, 1979; Kram, 1985; Levinson et al., 1978; Phillips-Jones, 1982). The purpose of this paper is to consider how other adult relationships in work settings—relationships with peers—can offer both similar and unique possibilities for personal and professional growth. Yet, while we know the general importance of relationships, we know little about adult relationships other than the mentoring relationship that directly encourage, support, and contribute to progress in life and career. A first step in the investigation of other developmental relationships in organizations is a systematic study of the nature of relationships with peers. **Turner [1976: 378–379; *ASQ*]** Administrative organizations may be thought of as cultural mechanisms developed to set collective goals and make arrangements to deploy available resources to attain those goals. Given this concern with future objectives, analysts have paid considerable attention to the manner in which organizational structures are patterned to cope with unknown events—or uncertainty—in the future facing the organization and its environment (Crozier, 1964; Thompson, 1967; Lawrence and Lorsch, 1967).	**Prasad [1993: 1400–1402; *AMJ*]** Altogether, a substantial body of research now offers insights into how computers change organizations and into the problems and issues associated with the implementation of computer technology. Yet, some writers (Barry, 1989; Hennestad, 1987) remain dissatisfied with previous work, which they have characterized as incomplete and inadequate. For the most part, they suggest that researchers . . . have neglected the symbolic dimensions of computerized work (Hennestad, 1987; Turkle, 1984). I attempted to fill some of these lacunae by looking at the symbolic processes contained in technological change. Symbolic interaction, an underutilized methodology, has immense potential to augment scholarly understanding of organizations. Although I adopted the methodology for studying the implementation of technological change. . . . It is hoped that my demonstration of the application of this approach will provide readers with insights into its use in other organizational situations. More recently, a theoretical recognition of the symbolic nature of computers and information technology has gained strength. . . . Despite this . . . recognition . . . very few empirical studies have systematically documented it or explored how it can influence organization-level action. . . . Such a perspective, could, however, clearly offer considerable insights into the processes of computer implementation in organizations. **Abolafia and Kilduff, [1988: 177–178; *ASQ*]** This study demonstrates how speculative bubbles, such as	**Boje [1991: 106–109; *ASQ*]** In organizations, storytelling is the preferred sense-making currency of human relationships. . . . People engage in a dynamic process of incremental refinement of their stories of new events as well as on-going reinterpretations of culturally sacred story lines. . . . Even in stable times, the story is highly variable. . . . These are complex aspects of storytelling in organizations that have been ignored in previous approaches to story analysis. Stories in previous laboratory, history and questionnaire research generally have been wrenched from their natural performance contexts and treated as objectified social facts (Ritzer, 1975), mere texts, with little empirical attention given to the natural linguistic context in which the stories are being performed. Text research does not capture basic aspects of the situated language performance. . . . In case history studies, researchers have relied on second- and third-hand accounts of a story, rather than examining a storytelling event in process. An example of the text-as-social-fact paradigm would be the IBM rule-breaking story analyzed by Martin et al. (1983). . . . The story is literature and its plot and characters are indeed interesting, but is it the way IBMers tell stories to one another in real time? . . . Valid and insightful as these assumptions may be, can we be assured that this story is really a reflection of the IBM culture? In the case of lab study research performance skills are not a consideration. . . . Story-text studies . . . have also ignored performance behavior . . . in the case of surveys, the textual content, rather than the storytelling event is the focus of study. . . . Stories can therefore be correctly interpreted only to the extent that the researcher grasps the story in situ.

TABLE 3 (continued)

Incompleteness	Inadequacy	Incommensurability
The central difficulty, therefore, lies in discovering which aspects of the current set of problems facing an organization are prudent to ignore and which should be attended to, and how an acceptable level of safety can be established as a criterion for carrying out this exercise. Wilensky (1967) has suggested that to deal with such situations, one must discover how to recognize high-quality intelligence about the problem in hand. Taking up this suggestion, this article considers the manner in which such an approach (focusing on failures of foresight) could be used to identify, as Wilensky (1967: 121) puts it, "the conditions that foster the failure of foresight." British public inquiries into major public disasters offer sets of information about some aspects of the intelligence failures that led up to them. . . . The main purpose of the present research, however, is not to produce a general theory of such disasters, although one may emerge incidentally, but to use them as a paradigm for the understanding of organizational failures of foresight, which also in their way are disastrous, although they may lack the public impact produced by a major loss of life.	the silver crisis of 1980, are socially constructed. The traditional phase structure of speculative bubbles . . . (Kindleberger, 1978) is reframed as a process of organizing. . . . The model of market process developed here reflects economic behavior that is strategic, political, and embedded in institutional structure. Recent work in economic sociology has focused on how market contexts influence the action of economic agents. A new awareness of how economic action is embedded in social relations has supplemented the neoclassical emphasis on economic actors as atomized agents. . . . Our model emphasizes that structure constrains actions and that action, in turn, shapes institutional structure. This view contributes a process perspective to the recent work on markets. The emphasis here on the social organization of speculative bubbles contrasts with the attention to the irrationality of crowd behavior that characterizes the recent models of both Minsky (1977) and Kindleberger (1978). Whereas Kindleberger emphasized how price movements influence people, we focus on how market participants strategically organize price movements. He assumed an atomized and disorganized crowd of market actors (1978: 28–41), whereas we concentrate on the purposive actions of powerful coalitions. According to Kindleberger, speculative bubbles pass through three phases. . . . In this paper, we emphasize that these phases result from and in turn influence three related processes: the actions, attributions, and regulatory efforts of powerful market participants.	**Eisenhardt [1989: 543–545; *AMJ*]** Yet, although decision speed seems to affect performance in such environments (Bourgeois & Eisenhardt, 1988) and is a key characteristic differentiating strategic decisions (Hickson, Butler, Gray, Mallory, & Wilson, 1986), there has been little research on fast strategic decision making. This article explores the speed of strategic decision making. . . . The results reported here are a set of propositions challenging traditional views of strategic decision making. The evidence suggests that fast decision makers use more, not less, information than do slow decision makers. They also develop more, not fewer, alternatives. In contrast to current literature, this study found that centralized decision making is not necessarily fast, but a layered advice process, emphasizing input from experienced counselors, is fast. The findings also indicate that conflict resolution is critical to decision speed, but conflict per se is not. Finally, integration among strategic decisions and between decisions and tactical plans speeds, not slows, decision making. Such integration helps decision makers cope with the anxiety of high-stakes decision making. Overall, fast decision making allows decision makers to keep pace with change and is linked to strong performance. A pattern of emotional, political, and cognitive processes that are related to rapid closure of major decisions emerged from this research. The empirical grounding of those ideas is the subject of this article.

[a] *ASQ* = *Administrative Science Quarterly; AMJ* = *Academy of Management Journal.*

and portray the study's proposed contribution somewhat tentatively and with humility. Moreover, we found throughout our sample that texts constructing incompleteness problematizations did so by specifying gaps and invoking these four rhetorical practices. Table 4 identifies the rhetorical practices that work to specify gaps. Below, we examine representative examples of each of these rhetorical practices.

Identifying lacunae, the first practice, is exemplified by these excerpts:

> Institutional theory provides a useful, but incomplete, view of how organizations cope with conflicting, inconsistent demands [Elsbach & Sutton, 1993: 700: 39–40].
>
> While the existing literature on institutionalization relies heavily on the role of myths . . . it is sketchy about the origins of such myths [Ritti & Silver, 1986: 9: 1–3].

Note how the texts explicitly identify the lacunae through the use of phrases such as "useful, but incomplete" and "existing literature . . . is sketchy." They paint a picture of the extant literature as headed in the right direction, but needing further elaboration.

Foreshadowing how the study fills lacunae is a second relevant practice. It is not enough to identify the lacunae; the text must also foreshadow in its introduction how the study fills the lacunae. Here, we show how the two texts profiled above accomplish this:

> Thus, a greater understanding . . . may be gained by blending institutional and impression management perspectives. . . . This article is an initial step toward such an integration. We propose a process model (Mohr, 1982) describing how institutional conformity of structures and procedures and the decoupling of illegitimate activities from legitimate structures set the stage for the use of impression management tactics [Elsbach & Sutton, 1992: 700–701: 46: 1–2, 16–20].
>
> The purpose of this paper is to increase our knowledge about the myths themselves and the processes that aid in their development. The case history . . . is used to examine how myths arise and are fostered, how they are dramatized in the context of interorganizational relationships . . . only later evolving into institutional solutions to institutional problems [Ritti & Silver, 1986: 29: 3–12].

In the first example, the integration of impression management with institutional theory is used to address the gap in the theoretical understanding of "how organizations cope with conflicting, inconsistent demands." In the second example, a study of myths themselves—their origin, development, and evolution—is undertaken to better explain their role in institutionalization.

Politely addressing extant literature also supports incompleteness problematizations. Texts are polite when addressing lacunae in an extant literature. They often establish alliances, but never create enemies.

> We subscribe to Scott's argument that the interorganizational field context is the appropriate level of analysis for understand-

TABLE 4
Process 2: The Textual Acts and Rhetorical Practices That Problematize the Intertextual Situation

Form of Problematizing	Textual Acts	Rhetorical Practices
Incompleteness problematization	Specify gaps (*by*)	identifying lacunae (*e.g., we discover a surprising gap*), foreshadowing how the study fills lacunae (*e.g., This article is an initial step toward such an integration*), politely addressing extant literature (*e.g., previous systematic research . . . has not clearly distinguished*), portraying own contributions tentatively and with humility (*e.g., we offer a contribution to the field of . . .*).
Inadequacy problematization	Illuminate oversights (*by*)	framing oversights and pointing out how an alternative perspective can redress oversights (*e.g., research has neglected . . . need to consider a different view*). foreshadowing how study addresses oversights (*e.g., in this article, we offer . . . as one way to address these issues*), portraying own contributions directly, yet with humility (*e.g., this study was designed to present a new model, not to refute an old one*), referencing literature support for an alternate perspective (*e.g., we took seriously the assertions that . . .* [*cites*]), introducing a partisan viewpoint, sparingly and tentatively (*e.g., to date, we have developed only the most rudimentary conceptual tools to investigate*).
Incommensurability problematization	Advocate for alternate thesis (*by*)	conducting a head-on challenge of an extant perspective (*e.g., the dominant view ignores*), replacing an extant perspective with own view (e.g., *rectifying these . . . warrants a different interpretation*), portraying own contribution directly, yet with humility (*e.g., this paper offers a different approach*), using provocative language and linguistic devices (*e.g., are strategies not also enacted?*).

> ing the interplay between a field's structural evolution and change in its institutional practices [Leblebici, Salancik, Copay, & King, 1991: 333: 11–15].
>
> Previous systematic research of internal corporate venturing has not clearly distinguished between new product and new business developing [Burgelman, 1983: 223: 27–29].

The first example explicitly creates alliances by identifying the specific writings used to develop the present study. Although the second example does not create such alliances, it is nevertheless polite in its discussion of the extant literature through the construction of a neutrally identified lacuna, "has not clearly distinguished."

Portraying their own contributions tentatively and with humility is another rhetorical practice in texts with incompleteness problematizations:

> In this article we offer a contribution to the field of organizational change by borrowing theory and practice from family theorists and therapists [Hirschhorn & Gilmore, 1980: 21: 3–5].
>
> My goal was to place another stone on the path toward improved service by offering a close examination of the role of service employees and their interactions with customers [Rafaeli, 1989: 246: 36–38].

The use of phrases like "offer a contribution," "place another stone on the path," and "should promote" rhetorically convey humility and the tentative proffering of a contribution.

Together, the textual act of specifying a gap and the four associated rhetorical practices problematize an extant literature as incomplete. Regarding this literature as providing valuable understanding, incompleteness problematizations offer to enrich the area of study by filling in details. They point out only what is missing in the literature, not what is wrong with it. Consequently, these texts specify gaps—both in terms of lacunae and how the current studies will fill them—by politely addressing extant literatures and portraying contributions tentatively and with humility.

Inadequacy. When problematizing a literature as inadequate, a text claims that the extant literature does not sufficiently incorporate different perspectives and views of the phenomena under investigation. That is, it claims that work in the extant field has overlooked perspectives relevant and important to better understanding and explaining the phenomena. An inadequacy problematization assumes that a contribution can be made to extant literature by pointing out the oversight and introducing alternative perspectives, frameworks, or both. Thus, the textual act of illuminating oversights emerges as the hallmark of an inadequacy problematization.

The excerpts from Prasad [1993] and Abolafia and Kilduff [1988] depicted in column 2 of Table 3 show how texts illuminate oversights and introduce alternative perspectives. Prasad's text claims that the literature on computerization and change has overlooked the symbolic perspective on computerization. This text identifies the oversight (T3: 6–12) by referencing authors who "remain dissatisfied with previous work" and in particular

with how that work has "neglected the symbolic dimensions of computerized work." In this same section, the text also positions itself with other authors cited as dissatisfied with the extant literature.

Although this text frames the oversight (T3: 2–12, 24–29), foreshadows how the study will address the oversight (T3: 12–18), and portrays its contribution directly yet with humility (T3: 18–23), it distinguishes itself, and the inadequacy problematization, by introducing a partisan perspective. That is, it argues for an alternative perspective. For example, when the text points out how the alternate perspective can redress the oversight, it does not simply suggest this and move on. Rather, it argues strongly for the benefits of adopting such a perspective. Accordingly, the text announces (T3: 17) that this perspective has "*immense* potential," not merely potential. Further, this perspective could not just add to the literature, it "could . . . *clearly* offer *considerable* insights" (T3: 30–31). Finally, when citing literature as support for the proposed perspective, the text once again invokes descriptors that move away from neutrality. Thus, we see supporting research as representing a "*theoretical recognition* of the symbolic nature of computers" that "has *gained strength*" (T3: 24–26). Although the tone remains polite, a partisan viewpoint is nevertheless explicitly introduced by arguing the need for an alternate perspective.

Abolafia and Kilduff's [1988] text claims that the economics literature has overlooked how economic action is socially constructed. This text frames the oversight and points out how an alternate perspective redresses the oversight (T3: 43–49) and portrays its contribution directly yet with humility (T3: 46–49, 50–51, 61–64). But, as with the text by Prasad [1993], what is most interesting is how this text builds a strong case for the proposed alternative perspective through the insertion of a partisan viewpoint. In this case, the text uses explicit contrast to disclose the partisan viewpoint: It juxtaposes the present study's focus on social construction with "recent work" (T3: 41–48). It then quickly narrows the contrast to that between the present study and the work of one researcher. The structuring of this contrast emerges as follows:

> The emphasis here on the social organization of speculative bubbles contrasts with the attention to the irrationality of crowd behavior that characterizes the recent models of both Minsky (1977) and Kindleberger (1978). Whereas Kindleberger emphasized . . . we focus on. . . . He assumed . . . whereas we concentrate on. . . . According to Kindleberger. . . . In this paper, we emphasize that (T3: 50–61).

In this short excerpt, the text contrasts the view it represents with prior research four times. Even though the tone remains polite, the four contrasts introduce support for the alternate perspective.

The examples disclose that the construction of an inadequacy problematization incorporates the textual act of illuminating oversights and five rhetorical practices: framing oversights and pointing out how alternative perspectives can redress them; foreshadowing how the present study will

address the oversights; portraying the study's contribution directly, yet with humility; citing literature as support for the alternate perspective; and introducing a partisan viewpoint. Table 4 identifies both the textual act and these rhetorical practices. Below, we develop representative examples of each rhetorical practice from other texts in our sample.

Framing oversights and pointing out how an alternative perspective can redress them is evident in these examples:

> A focus on issues as a starting point for interpretation and action in organization charts a different course for seeing patterns of organizational action than a traditional decision-making view. . . . Typically, researchers define a decision and trace backward from that point to find interpretations. . . . In contrast, a focus on issues begins with an issue or a collective construction . . . that is of concern for an organization and then proceeds forward from this recognition point to find relevant actions and interpretations . . . an issue focus underlines the importance of attention allocation and sensitivity to context [Dutton & Dukerich, 1991: 519: 7–9, 14–21].

> Institutionalist analysis must include all types of behavior, including those driven by interests and power (DiMaggio and Powell, 1991). This can be achieved if we take seriously the insight that institutions, while they are products of action, also constitute action. To handle both sides of this equation I propose that institutions be seen as nested systems, drawing a distinction between actions guided by the established order, on the one hand, and actions geared toward creating new or changing old institutions, on the other [Holm, 1995: 398–399: 35–36, 1–8].

Note how the excerpts above differentiate the extant perspectives from the ones they offer. In the text by Dutton and Dukerich, phrases such as "a focus on issues . . . charts a different course," "typically researchers," and "in contrast, a focus on issues," both frame the oversight in the extant decision-making literature and present the alternative focus on issues to redress the oversight. This is also the case in the excerpt by Holm, in which the extant view that institutions are products of action is differentiated from the offered view that institutions also constitute action. Neither text seeks to overthrow the extant literature but rather, both seek to validate the insights gained from taking an alternative perspective.

Foreshadowing how the study will address the oversights, the second rhetorical practice supporting an inadequacy problematization, can be seen in these excerpts:

> Management scholarship faces a crisis of representation (Marcus & Fischer, 1986). A variety of documents and texts, ranging from newspaper articles to government inquiry transcripts and reports, describe organizational events at a level of detail not otherwise available. Yet, it is difficult to incorporate such accounts into systematic empirical research. In this article, I offer the textual approach to qualitative research (Gephart, 1988a; Gephart & Wolfe, 1989) as one methodological means to address

> such representational difficulties in management research [Gephart, 1993: 1466: 20–27].
>
> It can be argued that major organizational decisions to persist or withdraw from a course of action are far more complicated than the . . . literature often implies. . . . Thus . . . we proposed [a model]. . . . Because the temporal model of escalation was essentially based on [one] case study, our two propositions have not yet received an independent test. The case study described herein . . . was designed to provide such an independent test . . . as well as an exploration into exit processes not addressed by the temporal model [Ross & Staw, 1993: 702: 14–16, 19; 703: 32–42].

The text by Gephart, which points out the inability of organizational research to incorporate documents detailing organizational events, foreshadows a "textual approach to qualitative research," offered to address the identified oversight. To address the oversight, the text by Ross and Staw offers a case study as an "independent test" and further "exploration" of organization-level dimensions of escalation of commitment.

These excerpts illustrate a third rhetorical practice supporting inadequacy, *portraying the study's own contribution directly, yet with humility:*

> This study was designed to generate new theory, not to test existing theory, and the paper is organized to present a new model, not to refute an old one [Gersick, 1988: 12: 7–9].
>
> Because our efforts to understand deck operations got us thinking about the possibility that performance is mediated by collective mental processes, we use these operations to illustrate that thinking, but the processes of mind we discuss are presumed to be inherent in all organizations. What may vary across organizations is the felt need to develop these processes for more advanced levels [Weick & Roberts, 1993: 3358: 5–12].

This practice is similar to how texts constructing incompleteness problematizations portray their contributions. The difference is that these texts convey the contributions more directly, with less tentativeness.

Citing literature support for an alternate perspective also supports an inadequacy problematization:

> Numerous writers suggest that the major function myths, corporate legends and cultural patterns fulfill is to provide a system of uniting that which would otherwise be fragmented (Burke, 1954; Benne, 1961; Becker, 1973; Dunphy, 1974). . . . It . . . follows that we can see, lurking within or beneath the myth, the cleavages threatening the organization as a whole that might erupt were the myth not present. This, we argue, is one substantive reason why organizational psychology should become more attuned to the functions of myths [Smith & Simmons, 1983: 377: 1–4, 8–13].

Texts constructing inadequacy problematizations legitimate their alternate perspectives by building on knowledge in other literatures—prior work on myths, in the above excerpt.

Introducing a partisan viewpoint, but sparingly and infrequently, is exemplified in these excerpts:

> After decades of research, we still know little about . . . [Donnellon, Gray, & Bougon, 1986: 43: 1].
>
> Despite the many contributions theoreticians have made to understanding conflict, the issue of how conflict moves remains unexplored. To date, we have developed only the most rudimentary conceptual tools to investigate the processes by which conflict moves [Smith, 1989: 3: 22–26].

The partisan support for the alternative perspective emerges in the critique of prior work. Note how certain words in the above excerpts convey partisanship: "after decades of research," "despite the many contributions," and "only the most rudimentary conceptual tools."

Together, the textual act of illuminating oversights and the five associated rhetorical practices problematize literatures as inadequate. Regarding extant literature as lacking essential perspectives, texts constructing inadequacy problematizations seek to redress oversights by providing alternative viewpoints or frameworks. This problematization stops short, however, of arguing that an extant intertextual field is wrong, instead allowing the proposed alternative framework to coexist with the extant field.

Incommensurability. When problematizing a text as incommensurate, an article suggests that the extant literature not only overlooks different and relevant perspectives, but also claims this literature is wrong. That is, the extant field is presented as displaying a misguided perspective or as having moved in the wrong direction. The assumption is that a contribution can be made to the extant literature by pointing out and correcting this error. Thus, the hallmark of texts that construct incommensurability problematizations is their direct advocacy of alternative theses that they regard as superior to those put forth in extant literatures.

The examples excerpted from Boje [1991] and Eisenhardt [1989], depicted in column 3 of Table 3, illustrate how texts construct incommensurability problematizations. Arguing that stories examined in previous research on storytelling have been "*wrenched* from their natural performance contexts" (T3: 12–13), Boje advocates the alternative thesis that storytelling be studied as a dynamic process occurring within a specific performative context. Clearly, the word "wrench" is not neutral. According to the *Oxford English Dictionary,* it denotes forcible movement; in this case, the forcible movement of storytelling out of its natural performative context.

The text does not begin with the word "wrench" and the head-on challenge to the extant literature. Rather, it first asserts the advantages of seeing storytelling as a dynamic process in context. The text moves immediately to that natural context rather than to the literature about storytelling. In fact, for the first 51 lines of the actual article, and beginning with the first two words, "in organizations," the natural context of storytelling is highlighted. Note how in the sentences, "In organizations, storytelling . . . is highly variable" (T3: 2–8), the text depicts the elements of dynamic process and depicts the performance of stories in an organizational context as crucial to the proffered alternative perspective.

The text next marshals prior literatures—other than the one challenged—to support the alternative thesis and argue that "these are complex aspects of storytelling in organizations that have been ignored in previous approaches to story analysis" (T3: 7–9). Then (T3: 11–36), through use of the word "wrench," questions challenging the reality of prior research results, continual juxtaposition of prior research and the proposed alternative, and frequent insertion of the words "situated," "real," "in situ," "natural," "performance," and "context," this text mounts a direct challenge to the extant literature and strongly advocates its own, alternative thesis. It doesn't want to just coexist with that prior work—it wants to overthrow it and replace it with the proposed perspective. Indeed, the text concludes as follows: "Stories can therefore be correctly interpreted only to the extent that the researcher grasps the story in situ" (T3: 34–36).

The text by Eisenhardt is another example of an incommensurability problematization. Arguing that prior research on rapid strategic decision making does not deal with "two key realities," this text advocates an alternative thesis bolstered by empirical findings that challenge the traditional literature. Specifically, the text suggests that "extant views may inaccurately describe how executives make rapid decisions" [Eisenhardt, 1989: 545: 33–34].

Once again, this text does not begin with the challenge, but rather builds up to it as the introduction unfolds. The article begins with a story of failed decision making in a context demanding speed and indicates that this story is "not unusual." Then, the text identifies an oversight in the prior literature (T3: 38–43), ending with the statement "There has been little research on fast strategic decision making." In addition, the text develops the proposed contribution of this study: "This article explores the speed of strategic decision making. . . . The empirical grounding of those ideas is the subject of this article" (T3: 44–45, 64–66). This contribution is portrayed matter-of-factly, humbly, and neutrally, in line with scientific norms (Gephart, 1988; Knorr-Cetina, 1981). However, sandwiched between these neutral sentences is the essence of this text's incommensurability problematization. In lines 45–60 of the Eisenhardt excerpt in Table 3, the text directly challenges *five* existing positions on fast strategic decision making: fast decision makers *use more, not less information . . . integration speeds, not slows* decision making, and so forth.

This text, too, directly challenges the extant literature and strongly advocates its own thesis. Through the constant and densely situated contrasting of prior and proposed research, the text most actively provokes and advocates its own thesis. It does not want to coexist with that prior work; it wants to overthrow it and replace it with the proposed perspective. However, because the challenge is sandwiched in between neutral-sounding statements and because it rests on "findings" and "evidence," the challenge is cast politely.

To accomplish the textual act of advocating an alternative thesis, these texts rely on four rhetorical practices: head-on challenging of extant per-

spectives, replacing extant perspectives with their own views, portraying their own contributions directly and with humility, and using language and linguistic devices to provoke. Table 4 identifies the textual acts and rhetorical practices used to construct a coherent incommensurability problematization. Below, we provide representative examples of each of these rhetorical practices from other texts in our sample.

Head-on challenging of extant perspectives is demonstrated in these excerpts:

> The dominant view posits a succession of phases. . . . During the first phase . . . managerial discourse sought to legitimate coercive shopfloor practices. . . . By the turn of the century, consolidations had set the stage for a second phase during which . . . rational theories of management dominated managerial discourse. . . . The Depression is widely held to mark the beginning of the third phase (Bendix, 1956; Wren, 1972) . . . managerial discourse began to emphasize normative control. . . . Although the thesis of a progressive shift toward normative control has considerable elegance, it rests on a reading of history that underplays events in the late nineteenth century and that ignores streams of thought that gained prominence after World War II [Barley & Kunda, 1992: 364: 1–21, 32–36].

> The study of organizational culture thus becomes translated into the study of the informal or "merely" social or symbolic side of corporate life. In anthropology, where the concept is most fully developed, culture concerns all aspects of a group's social behavior. . . . Applying this anthropological approach in corporations leads one to study participants' views about all aspects of corporate experience. These would include the work itself, the technology, the formal organization structure, and everyday language, not only myths, stories or special jargon. That some researchers select these for special emphasis says more about the culture of the researchers than the researched, for whom all culture is equally taken for granted [Gregory, 1983: 359: 9–13, 23–30].

These texts identify prevailing perspectives and then assert the ways in which those perspectives are misguided. The first text notes the "dominant view" as having "considerable elegance" and then critiques that view as resting on a "reading of history that underplays events" and that ignores other "streams of thought." The second text asserts that culture research in organizations is viewed as the study of the "merely social or symbolic side of organizational life." Critiquing that perspective, the text suggests the decision to study only these dimensions of life says more about the "culture of the researchers than the researched."

Replacing extant perspectives with own views is demonstrated in these quotations:

> Rectifying these oversights warrants a different interpretation of the historical record [Barley & Kunda, 1992: 364: 36–37].

> I began this research with the assumption that knowledge in a software support hot line was best thought of as a kind of data-

> base. . . . The database metaphor separates the knowledge from the machine. . . . Six months of participant observation in two hot lines forced me to reconsider this perspective. I began to see organizational knowledge in terms of members' performances [Pentland, 1992: 528: 28–39].

Not only do these texts challenge prevailing perspectives; they also position their own perspectives as better. Note how the first excerpt suggests that the proffered perspective will rectify oversights. And the second text, by sharing the process undergone by the researcher, contrasts the extant and emergent perspectives. In doing so, it argues for the new, emergent perspective, explaining that the data "forced [the researcher] to reconsider" the prevailing perspective.

Portraying their own contributions directly and with humility promotes an incommensurability problematization in these excerpts:

> We propose and find preliminary support for a theory that combines cultural constraints and material forces [Barley & Kunda, 1992: 363: 14–16].

> The purpose of this paper is to suggest a way to overcome this dualism in organizational research [Pentland, 1992: 527: 23–33].

Despite directly challenging the extant perspectives and attempting to replace those perspectives with the proffered ones, the texts constructing incommensurability problematizations are nevertheless humble as they directly portray their own contributions. In this regard, even this problematization maintains a degree of adherence to the scientific norm of straightforwardness and humility.

Finally, *using language and linguistic devices to provoke* is demonstrated by these excerpts:

> Are strategies not also enacted? . . . Is there not a need for a definition of the word that encompasses the "strategies" actually pursued by organizations? And, if so, is it not then conceivable that organizations may sometimes not succeed in pursuing the strategies they intended, indeed that they may end up pursuing strategies they never intended? The authors believe that the answers are yes [Mintzberg & Waters, 1982: 466: 1–4, 19–20].

> That so many organizational theorists suddenly have begun to bandy about what suspiciously appears to resemble an interest in contextually shared meaning should give one pause. While occupational sociologists in the tradition of the Chicago School have long been concerned . . . organizational theorists have been conspicuously silent on the matter until quite recently. Where, then, does one turn if one seeks to build a theory of how groups of people construct systems of meaning? If culture is an interpretive framework, what course should we take in ascribing ontological status to culture? By what principles do systems of meaning operate? Should cultures be studied sui generis, as systems of meaning in and of themselves? Or, is it better to study cultures as a set of discrete symbolic entities that can be used as variables to explain other properties of organizations? Or should we do both? [Barley, 1983: 393: 37–44; 393: 1–12].

As these excerpts show, texts constructing incommensurability problematizations often rely on questioning to provoke readers into critiquing extant views and adopting proffered views.

Together, the textual acts of advocating alternative perspectives or theses and using the four associated rhetorical practices problematize literatures as incommensurate. Regarding prevailing views in the literatures as misguided, these texts seek to replace them with alternatives.

CONSTRUCTING OPPORTUNITIES FOR CONTRIBUTION

The 82 articles that we examined indicate that two textual processes, structuring intertextual coherence and problematizing the situation, form the foundation for constructing opportunities for contribution to organization studies. Further, the variation in and interplay between these two processes make it possible for journal articles to textually invoke contribution in many different ways. Table 5 locates our sample of publications according to the forms of intertextual coherence and problematization they craft.

How, then, do these two processes support scholarly publications in textually making the case that they offer something important to the organizational studies community? In constructing intertextual fields, texts take the necessary first step toward this end by licensing a theoretical trajectory for contribution. They accomplish this through the construction of agreement among those scholars and researchers whose work has come before. Specifically, we found that license is granted through the presentation of (1) underlying agreement about unrecognized and undeveloped investigative areas, (2) long-standing, widely held, and explicit agreement about advancing research domains, and (3) inability to achieve consensus in investigative arenas that researchers agree are important. In the case of synthesized coherence, construction of an agreed-to but as yet unexamined theoretical area invites its exploration and development. The straight-line trajectory of progressive coherence encourages continued development and refinement of understanding in previously outlined theoretical frameworks. And the conflicting trajectories of noncoherence appeal for resolution of the discord. The textual achievement of each of these trajectories invokes contribution by inviting further investment of intellectual resources in the configured research topics.

Whereas in structuring intertextual coherence, texts authorize and shape opportunities for contribution, in problematizing that coherence, texts carve out larger or smaller spaces in, and signify the degree to which they propose to assert themselves into, those intertextual fields. With regard to space, as texts move from problematizing intertextual fields as incomplete, through problematizing them as inadequate, and on to problematizing them as incommensurate, the texts shape larger opportunities for contribution. An incompleteness problematization focuses on gap specification, or "next stepping" (Gephart, 1986, 1988), and acts rhetorically to create a small space in which to further specify. This construction only slightly complicates an

TABLE 5
Constructing Contribution Opportunities[a]

Process 1: Structuring the Intertextual Field	Process 2: Problematizing the Situation					
	Incompleteness		Inadequacy		Incommensurability	
	ASQ	*AMJ*	*ASQ*	*AMJ*	*ASQ*	*AMJ*
Synthesized coherence	Turner, 1976 Hirschhorn & Gilmore, 1980 Sutton, 1987 Lammers, 1988 Sutton, 1991 Kahn, 1993	Harris & Sutton, 1986 Sutton & Callahan, 1987 Rafaeli & Sutton, 1991 Eisbach & Sutton, 1992 Browning, Beyer, & Shelter, 1995	Broms & Gahmberg, 1983 Smith & Simmons, 1983 Martin et al., 1983 Cole, 1985 Donnellon et al., 1986 Abolafia & Kilduff, 1988 Weick & Roberts, 1993 Nelson, 1993	Dutton & Dukerich, 1991 Gephart, 1993 Phillips & Brown, 1993	Barley, 1983	Eisenhardt, 1989 Boje, 1995
Progressive coherence	Crozier & Thoenig, 1976 Sebring, 1977 Burgelman, 1983 Bartunek, 1984 Biggart & Hamilton, 1984 Heimer, 1985 Dunbar & Wasilewski, 1985 Ritti & Silver, 1986 Kieser, 1989 Vaughan, 1990 Leblebici et al., 1991	Kram & Isabella, 1985 Rafaeli, 1989	Edstrom & Galbraith, 1977 Biggart, 1977 Gephart, 1978 Stern, 1979 Gronn, 1983 Ross & Staw, 1986 Adler & Adler, 1988 Boisot & Child, 1988 Covaleski & Dirsmith, 1988 Smith, 1989 Henderson & Clark, 1990 Nee, 1992 Thomas, 1993 Barker, 1993 Fine, 1996	Kram, 1983 Isabella, 1990 Ross & Staw, 1993	Boje, 1991 Barley & Kunda, 1992	Mintzberg & Waters, 1982
Noncoherence	Jenkins, 1977 Alexander, 1979 Wiewel & Hunter, 1985 Finlay, 1987 Pinfield, 1986 Sackman, 1992		Anderson, 1983 Riley, 1983 Langton, 1984 Bills, 1987 Larson, 1992 Meyerson, 1994 Holm, 1994 Davis & Thompson, 1994	Kimberly, 1979 Gersick, 1988 Prasad, 1993 Gersick, 1994 Yan & Gray, 1995	Gregory, 1983 Pentland, 1992	

[a] Full references for these articles can be obtained from the first author. The sample also included two additional articles, Kmetz [1984, *ASQ*] and Weick [1993, *ASQ*] that did not conform to any of the nine ways of constructing contribution identified in this table.

extant literature, seeking primarily refinement and ongoing development. In contrast, both the inadequacy and incommensurability constructions create larger complications in an extant literature by proposing alternative perspectives that need to be addressed.

The degree to which a text proposes to insert itself into a configured intertextual field concerns how, and to what extent, it negates or challenges that field. Although all scientific texts criticize, a norm of politeness guides scientific writing (Myers, 1993). Thus, with a few rare exceptions, scientific texts "make friends to define enemies" rather than the other way around (Myers, 1993: 258). In our sample, the texts with inadequacy problematizations momentarily insert partisanship for the perspective being proffered; those with incompleteness problematizations criticize only implicitly—through the exclusion, or writing out, of enemies. Both of them adhere to norms of politeness by negatively evaluating an extant literature only indirectly and by implication. However, those texts constructing an incommensurability problematization do so by directly and negatively challenging alternate perspectives; in some cases, alternate perspectives are portrayed as rivals whose privileged status must be shattered. Although this is a rare textual voice, evidenced by only eight texts in this sample, its rareness nevertheless illuminates what perhaps lies beneath most scientific writing. Through the cracks in the "scientistic style" of writing (McCloskey, 1985, 1994), we can discern a tension and struggle involving authors' human commitments as scientists and their adherence to particular philosophical ideas. If that is the case, then the challenge embodied in the incommensurability problematization signifies those human concerns as fundamental, even for scientific writing. For these concerns become the problematizing foundation on which opportunities for, and the meanings of, contribution are constructed.

Through the interaction, then, of licensing a theoretical trajectory, carving out space, and inserting themselves into intertextual fields, the introductions we studied textually create opportunities for contribution. Furthermore, texts are authorized to make contributions by the consent and form of previous work. Ironically, as texts seek to offer something to organization studies, they (and their authors) are very much bound by the past. For example, in the construction of a contribution opportunity that is progressively coherent and incomplete, the texts supplement (Harari, 1979) what already exists. Even those texts with incommensurability problematizations need an extant literature to challenge and displace.

A less constrained view of textual contribution also emerges from examining the interaction of the processes. That is, for all of the objectivity and control conveyed through such features of "windowpane prose" (Culler, 1982; Gusfield, 1976; Rorty, 1978) or the scientistic style (McCloskey, 1994) as use of the passive voice and "objectification" of "data" and "evidence," texts have room to creatively construct opportunities for contribution. Texts can accomplish this by reinterpreting existing work, shaping intertextual fields, creating space, and advocating their perspectives. For example, as the

reinterpretation activities that accompany synthesized coherence clearly show, the consent that licenses textual contribution is, in no small part, of writers' own making.

Consider also the creativity associated with the unusual pairing of progressive intertextual coherence with an incommensurability problematization. Progressive coherence asserts the presence of long-standing consensus among researchers about a well-developed topic. What we expect to have coupled with this type of intertextual field is an incompleteness problematization seeking to specify the gap, not one that directly challenges and seeks to replace the dominant thinking. Yet three texts in our sample did create the opportunity for contribution in this way [Barley & Kunda, 1992; Boje, 1991; Mintzberg & Waters, 1982]. According to Davis (1971), this construction itself is interesting because it acts to substantially negate an established line of thought. That texts negate such literatures, his work suggests, is enough to make the texts interesting. However, our findings suggest that much more is in play. Coupled with the fact that these texts *do* negate an established literature is *how* they negate, a dimension that Davis (1971) overlooked. They not only take on the extant literature, but also orchestrate a dramatic buildup that plays on the long-established field [Barley & Kunda, 1992], tenacious and persistent undermining of the extant thought [Boje, 1991], and immediate and concise oppositions [Mintzberg & Waters, 1982].

Finally, another possibility for creating opportunity for contribution emerges from two texts that do not demonstrate the prevailing ways of creating opportunities for contribution we have detailed. Implicit in constructing intertextual fields is the idea that sufficient existing work to provide a trajectory must be written into a text to create an opportunity for contribution. Most of the texts in our sample fulfill this requirement, but two do not. These two texts, Kmetz [1984] and Weick [1993], construct introductions in which the presentation of previous work is noticeably absent. We could try and explain the exceptions away by noting Kmetz's early publication date or Weick's strong reputation in his field. However, these texts, by virtue of not writing in some form of intertextual field are, by their constitution, novel and unique. Following the logic of grounded theory, such exceptions are cause for further investigation.

CONCLUSIONS

Our study extends the organizational literature on scientific contribution by providing the first empirical analysis of how texts actually construct opportunities for contribution, detailing those specific textual acts and rhetorical practices through which such opportunities are textually achieved. By examining the situated microprocess of language usage in these texts, the study discloses a complex picture of contribution in organizational studies, and in qualitative work in particular, and underscores a number of key points.

First, if the textual constructions of journal articles' contributions that

this study has disclosed constitute what we in the community of organization studies scientists understand to be a uniqueness value, then at the very least, the achievement of uniqueness is a far more complicated process than previous discussions of this value have indicated.

Davis (1971, 1986), one author who addressed uniqueness, built his constructions of the "interesting" and "classic" on the examination of "famous" sociological texts. Unlike Davis, we included both the famous and the not-so-famous. We did not intentionally seek to have a different sample than Davis had. However, during our analyses, we began to identify texts that did not fit into Davis's definition. These texts often had incompleteness or inadequacy problematizations with progressive or synthesized constructions of intertextual fields. In discussing our reactions, we realized that Davis's sample would construct opportunities for contribution that lay somewhere in the four outer cells of Table 5—that is, the three incommensurability and two of the three noncoherence cells. Are all the studies that fall in the other five cells uninteresting and nonunique? Are they not important?

Second, the complexity and variety of contribution indicated by these textual processes challenges the extent to which uniqueness constitutes contribution. Certainly uniqueness or novelty is intimated in a number of ways: by portraying what has to date gone unrecognized (synthesized coherence) or by mounting a head-on challenge to existing work. But a lot more is happening in these texts than is suggested by the term "uniqueness." This study suggests that rather than being a defining characteristic, uniqueness is an attribution that organization scholars make to works that they understand to be important to the community. It is shorthand scholars use to indicate a work of value.

Third, this study underscores the importance of examining knowledge-bearing texts and frames a number of possibilities for future work. First, future work might examine whether and how the construction of contribution changes over time within a specific research domain. Is there a "processual" model of writing extant literature as research streams are invented, specified, and challenged? Second, we focused on the articles' introductions in order to better understand and explicate how texts create opportunities for contribution. However, each part of a text—the beginning, middle, and end—has a potentially different discourse function and presumably constructs contribution in different ways. Thus, future work needs to investigate how studies show their contributions (in their middle sections) and argue that they have indeed made contributions (in their endings).

Fourth, by examining the final textual outcomes, we have knowingly excluded the many active agents who play roles in their creation. Although the study of texts themselves is important for the reasons articulated in this article, to more completely understand the properties of texts, we must examine the relationship between texts and the social realities in which they originate (Knorr-Cetina, 1981) and to which they travel (Winsor, 1993). Future work might, therefore, examine how written works both change and remain the same from first draft to final published version. In addition, after

a text is published, it travels to a variety of audiences and is used in a variety of ways (Winsor, 1993). How does a text travel, relative to its construction of contribution?

And, finally, this study focused on one population—texts published in mainstream, established, American journals and using wholly qualitative data. Future work needs to examine the construction of contribution in texts using other types of data, such as quantitative data and qualitative-quantitative combinations. In future work, samples need to be drawn from established journals outside the United States, such as *Organisation Studies,* the *Journal of Management Studies,* and *Human Relations.* Finally, it would also be interesting to examine the construction of contribution in those journals that have been explicitly created to be nontraditional, such as the *Journal of Management Inquiry* and *Organization.*

At a broader level, our findings underscore the importance of understanding the rhetorical dimension of scientific work—the crafting of arguments whose function is to persuade an intended audience (McCloskey, 1994). The analyses show that the written work of organization studies scholars consists of much more than the presentation of data that speak for themselves; texts do not simply array "facts" and evidence logically. Rather, persuasive practices are woven into texts, even as they structure the coherence of the intertextual fields. At this general level, then, this study joins others that have deconstructed the pretense of objectivity in organizational studies devoid of authorial influence; yet at the same time, it preserves the idea of scientific knowledge. The result is an attempt to develop an approach to the construction of knowledge that is sophisticated, insightful, reasoned, and creative.

REFERENCES

Astley, W. G. 1985. Administrative science as socially constructed truth. ***Administrative Science Quarterly,*** 30: 497–513.

Bazerman, C. 1993. Intertextual self-fashioning: Gould and Lewontin's representations of the literature. In J. Selzer (Ed.), ***Understanding scientific prose:*** 20–41. University of Michigan Press, Madison.

Beyer, J. M., Chanove, R. G., & Fox, W. B. 1995. The review process and the fates of manuscripts submitted to *AMJ.* ***Academy of Management Journal,*** 38: 1219–1260.

Burrell, G., & Morgan, G. 1979. ***Sociological paradigms and organisational analysis.*** Heinemann Educational Books.

Cole, J. R., & Cole, S. 1967. Scientific output and recognition: A study in the operation of the reward system in science. ***American Sociological Review,*** 32: 377–390.

Corbin, J., & Strauss, A. L. 1990. Grounded theory research: Procedures, canons, and evaluative criteria. ***Qualitative Sociology,*** 13: 3–20.

Crane, D. 1965. Scientists at major and minor universities: A study of productivity and recognition. ***American Sociological Review,*** 30: 699–714.

Crane, D. 1967. The gatekeepers of science: Some factors affecting the selection of articles for scientific journals. ***American Sociologist,*** 3: 195–201.

Culler, J. 1982. ***On deconstruction: Theory and criticism after structuralism.*** Ithaca, NY: Cornell University Press.

Daft, R. L. 1983. Learning the craft of organizational research. ***Academy of Management Review,*** 8: 539–546.

Daft, R. L., & Lewin, A. Y. 1990. Can organizational studies begin to break out of the normal science straightjacket? An editorial essay. ***Organization Science,*** 1: 1–9.

Davis, M. S. 1971. That's interesting! Toward a phenomenology of sociology and a sociology of phenomenology. ***Philosophy of Social Science,*** 1: 309–344.

Davis, M. S. 1986. That's classic! The phenomenology and rhetoric of successful social theories. ***Philosophy of Social Science,*** 16: 285–301.

Gephart, R. P. 1986. Deconstructing the defense for quantification in social science: A content analysis of journal articles on the parametric strategy. ***Qualitative Sociology,*** 9: 126–144.

Gephart, R. P. 1988. ***Ethnostatistics: Qualitative foundations for quantitative research.*** Newbury Park, CA: Sage.

Glaser, B. G. 1978. ***Theoretical sensitivity: Advances in the methodology of grounded theory.*** Mill Valley, CA: Sociology Press.

Glaser, B. G., & Strauss, A. L. 1967. ***The discovery of grounded theory: Strategies for qualitative research.*** Chicago: Aldine.

Gross, A. G. 1990. ***The rhetoric of science.*** Cambridge, MA: Harvard University Press.

Gusfield, J. 1976. The literary rhetoric of science: Comedy and pathos in drinking driver research. ***American Sociological Review,*** 41: 16–34.

Gusfield, J. 1981. ***The culture of public problems.*** Chicago: University of Chicago Press.

Harari, J. V. 1979. ***Textual strategies.*** Ithaca, NY: Cornell University Press.

Kerr, S., Tolliver, J., & Petree, D. 1977. Manuscript characteristics which influence acceptance for management and social science journals. ***Academy of Management Journal,*** 20: 132–141.

Knorr-Cetina, K. 1981. ***The manufacture of knowledge: An essay on the constructivist and contextual nature of science.*** New York: Pergamon Press.

Kristeva, J. 1980. ***Desire in language: A semiotic approach to literature and art*** (T. Gora, A. Jardine, & L. Roudiez, trans.). New York: Columbia University Press.

Latour, B. 1982. ***Science in action.*** Cambridge, MA: Harvard University Press.

Latour, B., & Woolgar, S. 1979. ***Laboratory life: The construction of scientific facts.*** Beverly Hills, CA: Sage.

Martin, P. Y., & Turner, B. A. 1986. Grounded theory and organizational research. ***Journal of Applied Behavioral Sciences,*** 22: 141–157.

McCloskey, D. N. 1985. ***The rhetoric of economics.*** Madison, WI: University of Wisconsin Press.

McCloskey, D. 1994. ***Knowledge and persuasion in economics.*** Cambridge: Cambridge University Press.

Medawar, P. 1964. Is the scientific paper fraudulent? ***Saturday Review,*** August: 42–43.

Mone, M. A., & McKinley, W. 1993. The uniqueness value and its consequences for organization studies. ***Journal of Management Inquiry,*** 2: 284–296.

Myers, G. 1993. Making enemies: How Gould and Lewontin criticize. In J. Selzer (Ed.), ***Understanding scientific prose:*** 256–275. University of Wisconsin Press, Madison.

O'Connor, E. S. 1996a. Telling decisions: The role of narrative in organizational decision-

making. In Z. Shapira (Ed.), ***Organizational decision-making.*** New York: Cambridge University Press.

O'Connor, E. S. 1996b. Lines of authority: Readings of foundational texts in the profession of management. ***Journal of Management History,*** 2(3): 26–49.

Rorty, R. 1978. Philosophy as a kind of writing: An essay on Derrida. ***New Literary History,*** 10: 141–160.

Selzer, J. 1993. ***Understanding scientific prose.*** Madison, WI: University of Wisconsin Press.

Simons, H. W. 1990. ***The rhetorical turn: Invention and persuasion in the conduct of inquiry.*** Chicago: University of Chicago Press.

Strauss, A. L. 1987. ***Qualitative analysis for social scientists.*** New York: Cambridge University Press.

Strauss, A. L., & Corbin, J. 1990. ***Basics of qualitative research: Grounded theory procedures and techniques.*** Newbury Park, CA: Sage.

Strauss, A. L., & Corbin, J. 1995. Grounded theory methodology: An overview. In Y. Lincoln & N. Denzin (Eds.), ***Handbook of qualitative research:*** 273–285. Thousand Oaks, CA: Sage.

Turner, B. A. 1981. Some practical aspects of qualitative data analysis: One way of organising the cognitive processes associated with the generation of grounded theory. ***Quality and Quantity,*** 15: 225–247.

Turner, B. A. 1983. The use of grounded theory for the qualitative analysis of organization behavior. ***Journal of Management Studies,*** 20: 333–347.

Weick, K. E. 1989. Theory construction as disciplined imagination. ***Academy of Management Review,*** 14: 516–531.

Weick, K. E. 1995. Editing innovation into *Administrative Science Quarterly.* In L. L. Cummings & P. J. Frost (Eds.), ***Publishing in the organizational sciences:*** 284–296. Thousand Oaks, CA: Sage.

Whetten, D. A. 1989. What constitutes a theoretical contribution? ***Academy of Management Review,*** 14: 490–495.

Winsor, D. A. 1993. Constructing scientific knowledge in Gould and Lewontin's "The spandrels of San Marco." In J. Selzer (Ed.), ***Understanding scientific prose:*** 127–143. Madison: University of Wisconsin Press.

Yearley, S. 1981. Textual persuasion: The role of social accounting in the construction of scientific arguments. ***Philosophy of Social Science,*** 11: 409–435.

Zuckerman, H. 1988. The sociology of science. In N. J. Smelser (Ed.), ***Handbook of sociology:*** 511–574. Newbury Park, CA: Sage.

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DECISION MAKING IN AN ORGANIZATIONAL SETTING: COGNITIVE AND ORGANIZATIONAL INFLUENCES ON RISK ASSESSMENT IN COMMERCIAL LENDING

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Although management researchers would like to understand management decisions related to risk, almost all previous research on risk has used either experiments or aggregate corporate data rather than data from actual business decisions. In this initial research on risk in actual business decisions, we examined the risk assessments bankers assigned to commercial borrowers. We tested hypotheses derived from research in strategy, finance, and behavioral decision theory in order to assess the influence of both organizational and cognitive factors on the likelihood of risk assessment errors. Although we found that both organizational and cognitive factors influenced risky decision making, when both were present, organizational factors appeared to overwhelm cognitive biases.

Large literatures have developed to explain risk-related behaviors at the individual (behavioral decision theory), organizational, and corporate (finance and strategic management) levels. These literatures reveal a great deal about how people handle risk and uncertainty in experimental situations and how uncertainty influences corporate behavior and performance. Yet, despite these large and distinguished literatures, there is a dearth of statistical studies dealing with how managers and employees handle risk in making actual business decisions.

Drawing on experimental studies, the behavioral decision theory literature identifies many intriguing aspects of risk-related individual decision making. Although the research reported in this literature has relied heavily on experiments using student subjects, it also includes numerous experimental and survey studies using managers as subjects or respondents. Ex-

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perimental or survey studies have been done in the accounting (see Libby and Fishburn [1977] for a review) and insurance industries (see, for instance, Hogarth and Kunreuther [1989, 1992] and Kunreuther, Hogarth, Meszaros, and Spranca [1994]) and in general management (MacCrimmon & Wehrung, 1986; Shapira, 1995). In addition, experimental studies of risk-related decision making have been done in nonbusiness settings (for example, medical practices; see Curley, Eraker, and Abrams [1984], Baron and Hershey [1988], and Li and Adams [1995]). This literature focuses largely on how individuals depart from normative decision rules—that is, on how they err.

However, although these studies provide insight into the cognitive processes decision makers use in experimental situations, we know of no studies that have directly examined the factors that bias decision makers making business decisions in their day-to-day environments. Business decisions seldom come solely from isolated individual information processing. Both cognitive heuristics and organizational contexts probably influence organizational decision makers. Several studies have indicated that the context in which a decision maker resides influences evaluation of risk-related decisions (Bromiley, 1987; March & Shapira, 1987; Shapira, 1995; Starbuck & Milliken, 1988).

Furthermore, in recent years researchers have begun to challenge many behavioral decision theory findings regarding errors in judgment. In a review, Schwarz (1994) argued that experimental subjects make many standard assumptions that underlie normal interpersonal communications. For example, the recipients of communication normally assume that the communication is coherent, provides relevant information, provides a message appropriate to the sender's communicative intent, and conveys the truth as the sender sees it. When researchers violate these assumptions by, for example, providing irrelevant information, subjects quite reasonably try to make sense out of the information provided and consequently use irrelevant information. Because subjects try to make sense of all the information provided by researchers, the subjects' responses show dramatic variation that depends on the order in which the researchers present information, the numbers associated with response scales, and even the typography of research instruments. Schwarz concluded the following: "The typical procedures used in social cognition research are likely to result in an overestimate of the size and pervasiveness of judgmental biases. . . . If we are to understand their operation in natural contexts, however, we need to ensure that their emergence in laboratory experiments does not reflect the operation of determinants that are unlikely to hold in other settings" (Schwarz, 1994: 134).

Consistent with Schwarz's concerns, in the findings of MacCrimmon and Wehrung's (1984, 1985, 1986, 1990) work on managerial risk, estimates of managerial risk attitudes varied widely depending on the measurement tool employed. MacCrimmon and Wehrung asked managers to complete paper-and-pencil exercises that assessed their risk preferences and behaviors in a variety of different ways (for instance, gambles in personal or busi-

ness contexts, business gambles incorporated in an "in-basket" presentation, personality trait instruments, and normal life behaviors). MacCrimmon and Wehrung found that different measures of risk preferences were almost completely uncorrelated even within the same domain (e.g., business risks).

At the other end of the research spectrum, the corporate risk literature deals largely in corporate-level variables, such as the systematic risk of a firm's stock, income stream uncertainty, and bankruptcy risk. These studies consider, for example, how capital structure or liquidity influences aggregate risk and corporate performance, but they do not say much about how a corporate manager would deal with a normal risky business decision. With the sole exception of the measures used in some work on corporate diversification (Amit & Livnat, 1988; Bettis & Mahajan, 1985), the risk measures used cannot be related to specific corporate choices.

In this study, we extended the research on risk-related decision making to an organizational setting in order to explore both organizational and cognitive factors that may affect decision makers carrying out their normal responsibilities. By examining actual risk-related decisions, we could examine the effect of organizational context on decision makers. Using archival data on real business decisions prevented artificially controlling the information available to decision makers. Consequently, this setting alleviated Schwarz's (1994) concerns about experimenters' violating the rules of communication since the data pertained to decision makers using their normal rules of communication.

To summarize, both the behavioral decision theory literature and much of the managerial literature have emphasized ways in which managers deviate from rational, or expected, utility models of decision making with regard to risk (March & Shapira, 1987). Our study contributes to the management literature by examining the role and strength of both cognitive and organizational factors in leading to systematic errors using nonexperimental data and systematic statistical analysis.

THE DECISION CONTEXT: RISK ASSESSMENT IN COMMERCIAL LENDING

Unfortunately, few situations exist in which (1) managers frequently make and record risk assessments and (2) the correctness of such assessments can be evaluated. Many corporate investment decisions involve risk assessments, but often the assessments are not written down, the decisions are infrequent and unique, and data on the actual outcomes of the decisions are not retained. We studied an area in which these limitations do not hold: risk assessments made by commercial lending officers in a large bank.

Commercial lending by banks offers an appropriate area for the study of decision making since commercial lenders make judgmental assessments of risk and carefully track the outcomes related to such assessments. In addition, commercial lenders make repeated, similar decisions, which facilitates analysis. Commercial lending provides a setting in which decision makers

receive feedback and have full information systems support. If managers can perform unbiased risk evaluations, researchers are more likely to find such evaluations here than in the context of more abstract, infrequent decisions, such as those about strategic choice.

Risk assessments of commercial borrowers are critical decisions for banks since they determine approval of new loans, renewal of existing lines of credit, the interest rates charged, which section of the bank manages the loans, and the levels of loan loss reserves that will be maintained. Thus, commercial banks need their risk assessments to accurately reflect the underlying risk borrowers present. Systematic biases in risk assessment will cause banks to accept or undercharge risky borrowers (or to do both) or to overcharge, and possibly lose, lower-risk customers.

If lending officers rely heavily on standardized, quantitative models to assess the riskiness of borrowers, their risk assessments may be relatively unaffected by individual cognitive forces. In consumer lending, formulas determine many decisions about risk; however, in commercial lending human judgment plays a large role in risk assessment. Although banks have attempted to standardize and routinize the decision process, commercial loan officers in many banks, including the bank studied here, are not bound by statistical decision rules. Therefore, we believe that commercial lending provides an appropriate setting for examining the factors that lead to biases in risk-related decision processes.

THEORETICAL FOUNDATIONS AND HYPOTHESES

Like much of the behavioral risk literature, this study examines the factors that lead bankers to over- or underestimate the risk presented by commercial borrowers. Obviously, an overwhelming number of potential factors could influence decision makers.

In reviewing the management and decision-making literatures, we tried to focus on the factors that (1) related to repetitive decision making, (2) had been hypothesized to bias decision makers, and (3) could be tested with the kind of archival data available. On the organizational side, two factors appeared most likely to affect decision makers: pressure for profitability, which influences evaluation and reward structures, and the degree of formalization of decision processes. On the sociocognitive side, we identified three factors: ambiguity avoidance, cognitive reactions to portfolio effects, and the fads-and-fashions effect. One hypothesis, concerning level of satisfaction with prior organizational performance, could be derived from both the organizational and cognitive literatures. Although many other cognitive variables could have been included, many of those related more closely to less routine, more idiosyncratic decisions. In addition, some cognitive variables, such as those related to the representativeness heuristic, are very difficult to measure using archival data.

In some cases, organizational and cognitive research suggested different hypotheses. In others, only an organizational or a cognitive hypothesis was

available. From earlier organizational research (e.g., Bromiley, 1987; March & Shapira, 1987; Starbuck & Milliken, 1988), we suspected that when organizational and cognitive forces predicted opposite effects, organizational forces would tend to dominate. Therefore, when the two types of forces suggested competing hypotheses, we favored the organizational one.

The hypotheses to be presented are based, in some cases, on generalizing results of psychological research on individuals to decisions made in organizations. We would not argue that results obtained with organizational data can be used to reject a psychological phenomenon at the individual level, but rather that such results suggest whether the individual-level phenomenon appears to be influential at the organizational level. Such testing is particularly justified in the risk area, where numerous authors have attempted to use individual-level theories to justify hypotheses and findings at the organizational level (cf. Bowman, 1982, 1984; Fiegenbaum, 1990; Fiegenbaum & Thomas, 1985, 1986, 1988; Kahneman & Lovallo, 1993).

Duration of Relationship

How long a customer has been with a bank should influence risk assessment. Two conflicting arguments address the effect of the duration of a relationship. The first, based on the cognitive phenomenon of ambiguity avoidance, is that new customers will receive less favorable treatment. The second, based on organizational pressures for profitability, is that the treatment of new customers will be excessively favorable.

Ellsberg's (1961) experiments on *ambiguity avoidance* indicated that subjects generally avoided ambiguous choices. Curley, Yates, and Abrams (1986) tested six possible explanations for ambiguity avoidance. They found that if decision makers anticipate that others will evaluate decisions, they avoid ambiguous alternatives because they perceive them to be less justifiable than clear alternatives. Commercial lending fits this pattern extremely well in that lending officers must justify their decisions to both superiors and auditors. Perceived ambiguity about a borrower's worthiness should decrease as the length of the banking relationship increases. Therefore, the ambiguity avoidance concept indicates that the risk new borrowers represent should be overestimated, relative to how older borrowers are evaluated.

However, organizational pressures for profitability lead to an opposing hypothesis. Most organizational and strategy theorists (e.g., Cyert & March, 1963; Hofer & Schendel, 1978; Porter, 1980) have assumed that organizations strive for profitability and consequently create organizational pressure for profitability at the operating level. In many organizations, the planning process translates pressure for organizational profitability into pressure for subunit profitability (Bower, 1970). Consistent with this practice, the goal-setting process of the bank in which this research was set provided profit objectives for the bank's branches. Although the formal incentive system at work within this organization did not reward loan generation, both senior and branch managers informed us that branch managers commonly translated the branches' profitability goals into loan growth targets. Since profit-

ability rises with increases in both sales of loans and services to borrowers, managers saw growth in loan portfolios as a primary way to improve performance.

Thus, subunit profitability goals translated into pressure to increase loan portfolios, which implied both keeping current borrowers and attacting new borrowers. Since the interest rates charged and loan approvals per se depended on risk ratings, the desire to increase loan portfolios influenced risk ratings. However, the degree of influence that profitability goals had on risk ratings varied systematically within the loan portfolios.

Banks need to be more accommodating to new customers than to old customers. New borrowers have few informal psychological ties to a given banker (Adams, 1976; Macauley, 1963), making it likely that they will switch to other banks if offered more favorable interest rates or terms. Indeed, some new customers actively compare rates among banks. Studies of relationship duration in areas such as auditing (Levinthal & Fichman, 1988) have shown that the likelihood of a customer's leaving decreases with the duration of a relationship. Information exchanges over the life of a lending relationship improve the efficiency of the relationship (Sharpe, 1990) and limit the likelihood that a borrower will want to change banks, since the borrower would have to invest time to develop a relationship with a new bank. Furthermore, an older customer generally has multiple ties to a bank via loans, trust services, credit cards, and so forth, making switching banks more difficult than it is for a new customer with fewer ties. As a result, although the competition for new customers is intense, once a firm (a customer) has been with a bank for a significant period of time, the bank develops a degree of monopoly power and can charge a higher rate of interest on loans to that firm. Finally, drawing an analogy to March and Simon's (1958) employment model, we suggest that a generally satisfied customer reduces efforts to search for alternatives to a current arrangement. The longer the relation endures, the less likely the customer is to shop around.

For all these reasons, new borrowers switch banks more readily than old borrowers. Given organizational pressures for profitability, bank branch managers will encourage growth in their loan portfolios. Consequently, loan officers will treat new borrowers more favorably than old borrowers to insure that the former do business with their bank.

As stated earlier, our view is that when organizational and psychological factors compete, the organizational factors are likely to be more powerful. Thus, our hypothesis draws on the organizational pressure for profitability argument rather than on ambiguity avoidance:

> *Hypothesis 1. The duration of a customer relationship has a positive association with the direction of risk-rating errors, increasing the likelihood of overrating and decreasing the likelihood of underrating borrowers.*

With these contrasting arguments, care must be taken in interpretation of results. Most commonly, researchers have a single argument, and their

null hypothesis is the extreme position that a parameter specified by the argument is zero (Simon, 1977). Researchers attempt to reject the hypothesis that the parameter is zero and, if they can reject that hypothesis, conclude that the data agree with their theory. Our two contrary arguments present a slightly more complex situation. If the sign of the appropriate parameter supports Hypothesis 1 and is statistically significant, we can conclude that the data agree with Hypothesis 1. At the same time, we cannot conclude the data do not demonstrate support for the ambiguity avoidance argument. We must recognize that this effect might be present but is simply overshadowed by the effect of pressure for profitability. That is, organizational pressures for profits might be large enough to mask a small ambiguity avoidance effect.

Loan Size

Assessing the influence of loan size on risk errors leads to a similar pair of competing arguments. Both cognitive and profitability arguments pertain to loan size.

From a cognitive perspective, Kahneman and Lovallo (1993: 22) argued that, for decisions viewed in isolation, the willingness to take risks is approximately constant for decisions that vary greatly in size. Further, they argued that decision makers generally think of decisions as individual choices even when they could be viewed as instances of a category of similar decisions.

Our observations in the bank and discussions with its lenders indicated that the bankers did frame risks narrowly rather than as instances of a larger class. Commercial lending officers intentionally tried to evaluate each borrower as an individual case, and the information systems that were in place did not really provide information to the lending officers that would encourage them to do otherwise. The professionalism of a lending officer lay in the ability to evaluate borrowers. Given that the bankers viewed loan decisions in isolation, Kahneman and Lovallo's argument predicted that bias in risk assessments would not be related to loan size.

However, a banker facing organizational pressure for profitability will rate the risk of loans of differing sizes differently since the value of a loan to a bank depends on its size. Large loans generate a greater cash flow and increase the size of a loan portfolio, both of which relate to profitability in banking organizations. Furthermore, large loans cost less to administer per dollar borrowed than small loans; a portfolio of ten $100,000 loans costs much more to administer than one $1,000,000 loan. Consequently, a bank makes greater profits on the large loan than on the small ones, even given the same interest rate. Since the risk assessment constitutes the primary factor a lending officer can manage to encourage or discourage loans of a given size, we would expect excessively high risk assessments for small loans and excessively low risk assessments for large loans.

We hypothesize that the organizational effect will outweigh the cognitive effect when it comes to the influence of loan size on risk-rating biases.

Hypothesis 2. Loan size has a negative association with the direction of risk-rating errors, decreasing the likelihood of overrating and increasing the likelihood of underrating borrowers.

The Fads-and-Fashions Effect

Shiller (1984) argued that stock market investors react to fads and fashions. Information that has little real value can affect both the amount and the distribution of investment in the stock market. For example, investors have seen conglomerate mergers very favorably at certain times, and the stock prices of firms acquiring unrelated businesses have reflected this perception, but at other times such mergers have been seen unfavorably. Similarly, Black (1986) argued that noise information affects the valuation of stocks, making stock prices unpredictable. Noise information could result in the types of fashionable investing trends that Shiller envisioned. Banking may be subject to a similar phenomenon, as industries may be considered especially exciting at at a given time, and so lending to them becomes fashionable.

In general, the excitement an industry conveys should increase the difficulty of assessing the risk a borrower from that industry presents, whether that risk is high or low. Excitement comes from unanticipated events and the possibility or expectation that such events will occur. For example, many high-technology industries are exciting because people believe innovations will occur in them, but they cannot predict which firm in which year will have a successful innovation. In the earliest years of the personal computer industry, the industry was very exciting, but few could predict which firms would survive. Some commercial lenders told us that they avoided high-technology firms as overly risky.

However, the fashion argument predicts the opposite: bankers may prefer to lend to firms in exciting or innovative industries even if industry performance indicators suggest otherwise. Just as investors may gain some personal satisfaction by investing in exciting or otherwise desirable firms (for instance, a number of mutual funds provide socially concerned investors with socially "appropriate" investments), we believe that lenders will be influenced by the excitement value of the industry to which they lend. The overeagerness of commercial banks to lend to oil companies during the oil boom fits this picture; events like the Penn Square disaster, in which numerous banks overinvested in risky oil exploration loans, suggest that this eagerness was not justified. In another example, First Bank System of Minnesota decided to lend to the California movie industry, the ultimate exciting industry—and one in which First Bank had very poor returns. By this argument, customers in exciting industries will be more likely to receive lower risk ratings than customers in unexciting industries of the same actual riskiness.

Hypothesis 3. The excitement value of a borrower's industry has a negative association with the direction of

risk-rating errors, decreasing the likelihood of overrating and increasing the likelihood of underrating borrowers.

Unlike the earlier constructs, the fads-and-fashions effect is predicted on a sociocognitive basis, and no countervailing organizational force is predicted.

The Influence of Prior Performance

Drawing from both behavioral decision research (Kahneman & Tversky, 1979) and organizational theory (Cyert & March, 1963), researchers have argued that when organizations perform at a level below performance targets, they attempt to make changes and take risks in hopes of getting back above target (Bowman, 1980, 1982, 1984; Bromiley, 1991; Fiegenbaum & Thomas, 1985, 1986, 1988; March & Shapira, 1987; Miller & Bromiley, 1990; Singh, 1986). Conversely, organizations that perform at levels above their performance targets tend to become more conservative in their risk taking. In the commercial banking field, the easiest way for a branch bank unit to take risks is by underestimating the risks inherent in its loans. Unit-level managers cannot simply assess risk correctly and still make riskier loans because central bank systems will quickly identify such loans as problems. Therefore, drawing on prior organizational research, which relies heavily on cognitive theories, we would expect that bankers in poorly performing branches will underestimate the riskiness of loans and that those in branches performing well will overestimate the riskiness of loans.

Hypothesis 4. Branch performance has a positive assso-ciation with the direction of risk-rating errors, increasing the likelihood of overrating and decreasing the likelihood of underrating borrowers.

The remaining hypotheses reflect organizational forces for which we identified no competing cognitive forces.

Organizational Standardization

According to the behavioral theory of the firm, routines act as the repository for organizational knowledge (Cyert & March, 1963; Nelson & Winter, 1982), and organizations' managers learn by observing outcomes and adjusting routines (Bromiley & Marcus, 1987; Cohen, 1991). Routines also increase the predictability of outcomes (March & Simon, 1958). We refer to increased specification of decision processes as standardization. The corporate management of the bank that was studied attempted both to increase the clarity of the rules for making loan decisions and to ensure that all branches conformed to the same set of routines.

Over the study period, the degree of standardization found in the bank's loan review process substantially increased. At the beginning of the study period, the bank branches acted fairly autonomously and utilized varying loan review processes. By the end of the period, the bank had a highly standardized loan review process across loans and across branches.

Management may change risk assessment processes to achieve two different objectives: to reduce bias (consistent tendencies to over- or underrate loans) and to increase reliability (as manifested by lower overall error rates). If management believed loan officers tended to make systematic errors by consistently over- or underassessing risk, standardization might change the overall tendency to over- or underrate risk in a portfolio. For example, if management believed risk assessments were insufficiently conservative, they might attempt to increase conservatism via explicit guidelines on what borrower characteristics implied what classification. However, if management believed assessments were on the average adequate but that the noise level in the assessments was unacceptably high, then standardization might attempt to simply reduce the frequency of errors by increasing the consistency of the procedures and risk-rating criteria used by lenders. Senior managers reported that the goals of the standardization process included increasing the predictability and consistency of risk ratings as well as increasing the level of conservatism in the bank.

Consequently, assuming that standardization has outcomes consistent with managerial intent, we expected that increased standardization of the loan review process would result in more overrated and fewer underrated risks and a decrease in the error variance in risk evaluations.

Hypothesis 5. Standardization has a positive association with the direction of risk-rating errors, increasing the likelihood of overrating and decreasing the likelihood of underrating borrowers.

Hypothesis 6. Standardization has a positive association with the likelihood that a loan will receive an accurate risk rating.

DATA AND METHODS

The Site

We obtained permission to interview individuals involved in the commercial lending process and to statistically analyze the lending decisions at the Community Banking Division of Norwest Banks. We collected data on loans, risk assessments, and borrowers from the loan files of borrowers at five branches of the bank. Norwest, a superregional bank-holding company, exhibited strong overall performance during the time period covered in the study, 1986–93. In 1992, IBCA Ltd. rated Norwest as one of the ten most profitable banks in the world.

We had complete access to all the bank's commercial loan files. The bank typically maintains ongoing relationships with commercial customers and reviews each borrower annually, evaluating the current creditworthiness of the borrower using a seven-point rating scale. We collected annual loan review data (including the beginning date of the lending relationship, the amount of existing loans, the borrower's risk rating, and more, and fi-

nancial statement data from the loan files for all corporate borrowers who had loan balances of at least $100,000 (the minimum for full annual documentation). Most of this bank's branches maintained limited commercial loan activities. The five branches examined had the largest commercial loan portfolios in the target metropolitan area. The loan and financial data we obtained covered 223 firms. Because we had multiple years of data for each firm, the data set included 787 total observations.

We interviewed corporate managers involved in the commercial lending activity as well as branch managers, commercial lending supervisors, and commercial lending officers. The branch managers said that they operated with an extremely thin margin between the cost of funds and the rates they charged borrowers. Thus, they placed a heavy emphasis on avoiding bad loans. The bank had a rating system whereby 1 indicated low risk and 7 indicated, if not actual bankruptcy, a high probability of the bank's not recovering all the funds due. At the time of loan origination, the bank rated most small commercial borrowers as at risk level 3 or 4. If a borrower was later reclassified to risk level 6 or 7, the bank usually transferred the file from the branch that issued the loan to a separate organization that attempted to work out the loan—to recover the funds invested without loss of capital and try to get the interest owed.

Commercial loans are not usually isolated, single-period transactions; rather, most commercial loans go to ongoing customers. Indeed, this bank emphasized developing close relations with customers to encourage their purchases of other services that might be both lower risk and more profitable than the loans themselves. The bank's incentive system for commercial bankers rewarded sales of ancillary services but not origination of new loans.

Although the formal incentive system did not reward individuals' loan generation, the branch's performance evaluation criteria included profitability goals that branch managers informally translated into loan-growth-rate targets. One senior manager suggested that branches with extremely fast growth in loans outstanding probably underestimated borrower risk in order to have high performance.

The bank increasingly emphasized a high level of standardization. Risk rating followed a carefully defined process, and both the superiors of the commercial lending officers and internal loan reviewers/auditors often reviewed the ratings. Both branch and corporate managers said the extent of latitude granted branches had declined in recent years and that emphasis on avoiding losses or recognizing potential losses had increased.

The Model

To define risk assessments as errors, some criteria for correct risk assessments must be created. We began by developing a model of risk assessment based on the data available to loan officers at the times of the risk assessments.

In the first phase of the analysis, we used ordinal logistic regression analysis to develop a model to explain the annual risk ratings loan officers assigned to the borrowers. The model was estimated using data on borrowers in loan-rating categories 3 to 6, since very few borrowers fell in the other risk categories; only 13 of the 787 observations were in categories 1, 2, or 7. Drawing on the factors identified in the risk-rating-rationale section of the bank's loan review manual and also on discussions with bank managers, we selected six variables: the ratio of profit before interest and taxes to total assets, which measures profitability; the ratio of cash flow after debt amortization to total assets, which measures cash flow; the current ratio, which measures liquidity; the ratio of net worth to total assets, which measures leverage; the ratio of net working capital to total assets, which measures the collateral margin (an indicator of marketable collateral); and the logarithm of total assets, which measures size. These variables closely resemble those identified in earlier work on predicting bankruptcy or default risk (Altman, 1968, 1984; Beaver, 1966; Edmister, 1972; Hoeven, 1979; Ohlson, 1980).

For model development, the database was divided into two parts. Using random numbers, we selected approximately two-thirds of the data for model estimation and held out the remaining one-third for model validation. Thus, of the 787 total observations, 506 were selected for use in estimation, with the remaining 281 used for validation. Although the estimation database included 506 usable observations, the model was estimated using 76 observations since we needed to have equal numbers of observations in each risk rating to ensure that the resulting model would not be biased toward any particular risk rating. Thus, we estimated the model using a data set that contained 19 observations in each of the risk ratings included in the analysis, for a total of 76 data points.

A stepwise logistic regression analysis starting with the six variables resulted in a three-variable model that included net worth to total assets, net working capital to total assets, and profit before interest and taxes to total assets. The other three variables did not significantly add to the explanatory value of the three-variable model.

Using parameter estimates from the resulting logistic regression equations to predict the riskiness of loans in the hold-out sample, we found the model predicted the exact rating assigned by the bankers 53 percent of the time. This percentage significantly exceeds the 25 percent that would result by chance ($p < .01$). Furthermore, the model disagreed with the bank by more than one risk-rating level only 7 percent of the time, compared to the 38 percent that would result by chance. A detailed discussion of the model's development and validation appears in an earlier publication (McNamara & Bromiley, 1993).

Dependent variable. The hypotheses concern whether the bankers' risk ratings erred by being too high or too low. If the model and a banker's assessment agreed, we assumed the rating was correct. If the model and the banker disagreed, we had to evaluate whether the banker's rating was correct

or incorrect. We determined this in the following manner: If the assessment in year t for a banker and the model differed, we asked whether the banker's assessment changed in future years. If the banker's assessment did not change, we could not determine whether the banker was incorrect.[1] Similarly, if the banker's assessment moved away from the model's, we were fairly certain that the model was incorrect. We defined the banker as in error when (1) the predictions of the model differed from the banker's assessment and (2) the banker's assessment moved toward the model's assessment within the next two years. For example, if the model predicted a loan's risk as a 4 in year t and the banker assessed the risk as a 3 in year t but changed the assessment to a 4 in year $t + 1$ or $t + 2$, we considered the banker's assessment in year t as incorrect and coded the risk of the borrower as underrated.

The hypotheses in the study relate to understanding cases in which the bankers erred. Consequently, we took all the observations with two subsequent years of assessments for those customers and classified them as (1) overrated: a banker assessed the risk as higher than the model did, and the banker moved toward the model's assessment within two years; (2) underrated: the banker assessed the risk as lower than the model did and the banker moved toward the model's assessment within two years; and (3) other: the model and the banker agreed, or they disagreed but the banker did not move toward the model. The cases were coded as overrated (1), other (0), and underrated (−1). Therefore, our analysis explicitly tested whether the hypothesized variables explained which types of loans received over- or underestimated risk ratings.

We used each firm-year combination as an observation, which resulted in 523 observations that could be categorized into one of the three groups. The rest of the observations were not included since we did not have the two years of subsequent information needed to determine the direction of change in the bankers' risk ratings. Most of the observations (73%) for which we did not have three years of data were for loan reviews conducted in the last two years for which we collected data, 1990 and 1991. The remainder were for

[1] Given that these are ongoing relationships, inertia may delay changes in risk ratings. Although it is possible to argue that if a loan's risk rating is not changed within two years, the bank is correct and the model incorrect, it is equally possible to argue that for many of these loans, inertial effects will not have been overcome within two years even though the loan risk is over- or underrated. Three factors indicate to us that the latter argument is often true. First, the bank did not maintain an information system that would have allowed bankers to learn from earlier mistakes in rating the riskiness of loans. Consequently, there was no information-system-based learning taking place that would lead to the "debiasing" of risk ratings. Second, the publication of research (McNamara & Bromiley, 1993) in which we discuss the development of the risk-rating model sparked significant interest from several regional banks. This indicates that commercial lenders are less than fully confident in the risk ratings they apply to their loans. Third, we discussed the meaning of these persistent differences between the model's estimate of risk and the bank's estimate with senior managers at Norwest, and they were in agreement that we could not conclude whether the bank or the model was more accurate.

TABLE 1
Distribution of Observations across Borrowers

Number of Observations per Borrower	Frequency
1	23
2	59
3	45
4	53
5	7

borrowers who paid off their loans, left the bank, or dropped below the $100,000 cutoff for full documentation within two years. Of the 523 observations, 82 were identified as underrated, 24 were identified as overrated, and 417 were identified as other. These 523 observations came from 187 borrowers. The remaining 36 borrowers had less than the three years of reports necessary to be included in the analysis. Table 1 shows the distribution of observations.

Independent variables. The number of years the bank had loaned to a given customer measured the duration of the relationship. The outstanding amount of a loan in millions of dollars measured its size. We measured the performance of a branch as its profitability in the prior year. Since the bank changed its profitability measures during the span of the study, we used an ordinal variable that reflected the relative profitability of each branch in each year.

Although a series of actions taken by the bank indicated that the degree of standardization in the loan review process increased over the life of the study, we were unable to objectively measure standardization. Consequently, we measured it using perceptual measures. We asked three senior managers who had been in management roles throughout the study to complete a short questionnaire in which they assessed the degree of standardization by year using four questions rated on a seven-point Likert scale. Three of the questions were modified versions of questions used by Van de Ven and Ferry (1980: 161–162) for measuring unit standardization. We added a fourth question designed to measure the degree of standardization across units (branches). The Cronbach's alpha across the four measures exceeded .98 for each respondent. We averaged the responses across questions and respondents to get an overall indication of the degree of standardization by year. As we expected, the responses indicated that the degree of standardization increased over the time period of the study.

Because industry excitement value is inherently a perceptual construct, we measured three industry characteristics using perceptual measures. Three banking industry experts asssociated with a major midwestern university, all with practical experience in the banking sector, rated the profitability, volatility, and interest/excitement of all industries (defined by four-digit Standard Industrial Classification [SIC] code) represented in the sample on a scale of 1 to 5, with 5 being high profitability, volatility, and excite-

ment.[2] Because the bank questioned the accuracy of its categorization of borrowers at the four-digit SIC code level, we averaged each rater's responses to obtain estimates at the two-digit SIC code level. Cronbach alpha coefficients for the profitability, volatility, and excitement variables were .51, .56, and .57, respectively. For use in the analysis, we averaged the ratings of the three experts for each two-digit SIC code industry.

Analytic methods. Because the dependent variable could take on three discrete but ordered values, we used multinomial ordinal logistic regression analysis to test Hypotheses 1 through 5. Hypothesis 6 (change in accuracy over time) was tested using binomial logistic regression with the standardization variable as the only independent variable. Overrated and underrated loans were combined in order to test the hypothesis that the number of misrated loans decreased as standardization increased.

Test for regression to the mean. We tested whether our results could be affected by regression to the mean. Of the 106 observations in which the bankers' risk ratings erred, 41 had risk ratings that moved toward the mean risk rating (4), and 65 moved away. In contrast, of the 29 observations for which we concluded that the model erred, 11 moved toward the mean risk rating, and 18 moved away. These results suggest that error corrections in the data do not reflect regression to the mean (i.e., extreme estimates later being closer to the mean) for either the bankers or the model.

RESULTS

How Good Is the Model?

To evaluate the quality of the predictive model, we compared its quality of prediction to that of the bankers themselves. Over the past three decades, studies have found that decisions previously considered to be extremely complex judgments could be readily modeled (cf. Clarkson, 1962). Indeed, many of these studies have shown that models based on individuals' decisions can subsequently make better decisions than the individuals (cf. Dawes, 1971; Goldberg, 1970). In the case of commercial lending, this finding suggests that a good model of the bankers' risk assessments might predict a borrower's creditworthiness better than the actual risk assessments themselves. If that were so, it would lend credibility to our experimental model.

We examined cases in which the banks and the model disagreed and compared the likelihood that subsequent bankers' risk ratings moved in the direction of the model's predicted risk rating to the likelihood that they moved away.[3] For the 56 borrowers for which a banker's risk rating was

[2] Profitability and volatility were measured in order to check that the measure of excitement did not act as a proxy for either of these other two factors. The actual wordings of the questions were: (1) "How profitable on average is this industry?" (2) "What is the variability in profitability in this industry over time?" and (3) "To what degree is this industry exciting or interesting?"

[3] To make the observations in the test independent, each borrower could only enter this test as one observation. Thus, if the bank erred on a given customer for two years, it would only be counted once in the analysis.

lower than the model's and was adjusted within two years, the banker adjusted the risk rating in the direction of the model's rating 48 times. We could clearly reject the hypothesis that when the banker's risk assessment was lower than the model's, the likelihood of moving toward the model's assessment was 0.5 (binomial test, $p < .0001$). Of the 30 times when a banker's risk rating exceeded the model's and the rating was adjusted in subsequent years, the banker adjusted the risk rating in the direction of the model's 21 times. Again, we could reject the hypothesis that the probability of moving toward the model's assessment was 0.5 (binomial test, $p < .05$). Thus, we could conclude that when the model and the bankers' assessments differed and we could discern which was correct, the model was correct more often than the bankers. This finding provides additional confidence in the model.

The Main Analyses

Table 2 presents the results of the three-level ordinal multinomial logistic regression analysis.[4] We could reject the hypothesis that the nonintercept parameters were zero ($p < .0001$) and therefore concluded that the behavioral variables, as a set, aided in distinguishing among the three categories of loans.

Given the existence of organizational pressure for profitability, we hypothesized that lenders underestimate the risk newer borrowers present (Hypothesis 1). In contrast, the ambiguity avoidance argument implies newer borrowers should receive overestimated risk ratings. Consistent with Hypothesis 1, the length of the bank's association with a customer significantly ($p < .01$) and positively influenced risk-rating errors; as the duration of the relationship increased, the likelihood that a loan's risk would be underrated decreased, and the likelihood that the loan risk would be overrated increased. As noted above, this finding does not demonstrate that ambiguity avoidance has no influence but that, if it does have influence, it was overwhelmed by the organizational pressure for profitability.

Organizational pressure for profitability was also the basis for the hypothesis that lenders overestimate the riskiness of small loans and underestimate the riskiness of large loans (Hypothesis 2). In contrast, Kahneman and Lovallo's (1993) cognitive argument implies size should have no effect on risk-rating errors. Consistent with Hypothesis 2, we found marginal support ($p < .10$) for the hypothesis that loan size has a negative influence on rating

[4] We tested whether sample selection (i.e., losing observations with insufficient subsequent data) influenced these results. Using a sample selection estimate routine from LIMDEP Version 6.0 (Econometric Software, 1992), we attempted to estimate the sample selection model with a "logit" analysis but found it did not converge. Consequently, we used multinomial "probit" analysis, which did converge. The results from multinomial probit analyses with and without sample selection were identical to two decimal places. Probit results differed from the logit analysis in only one way: the statistical significance of loan amount declined from $p = .09$ to $p = .15$. Given that we had chosen logit initially, we present and interpret logit results, recognizing the weakness of the estimate on loan amount.

TABLE 2
Results from Three-Level Ordinal Logistic Regression Analysis[a, b] for Risk Assessment Error

Independent Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Probability
Intercept 1	−2.13	1.31	2.66	0.10
Intercept 2	2.93	1.32	4.96	0.03
Duration of relationship	0.03	0.01	12.39	0.00
Loan amount	−0.22	0.13	2.78	0.10
Industry profitability	0.64	0.38	2.75	0.10
Industry volatility	0.45	0.31	2.12	0.15
Industry excitement	−0.95	0.24	15.29	0.00
Branch performance	−0.03	0.08	0.14	0.71
Standardization	−0.21	0.10	4.58	0.03

[a] The dependent variable was coded as follows: risk assessment erred by being too low = −1; risk assessment erred by being too high = +1; other = 0.

[b] $N = 523$. For the test that all covariates except the intercepts equal zero, $\chi^2 = 34.63$, 7 *df*, $p < .0001$.

errors, reducing the likelihood of overrating and increasing the likelihood of underrating.

One might argue that this bias toward large loans simply means that large loans go to larger customers, who are less likely to fail. The data do not support this relationship. When we developed the model to predict risk, firm size was included in the stepwise logistic regression procedure but did not significantly aid in predicting a loan's risk rating. We also conducted an additional logistic regression analysis using risk-rating errors in which we replaced loan size with firm size; the firm size parameter was statistically insignificant ($p = .55$). Loan size had a marginally significant ability to predict errors in ratings even though firm size did not help predict either firm risk ratings or errors in risk rating. The effect of loan size clearly does not come from being a proxy for firm size.

On the basis of a cognitive phenomenon labeled the fads-and-fashions effect, we hypothesized that the excitement value of an industry negatively influences risk-rating errors, decreasing the likelihood of overrating and increasing underrating (Hypothesis 3). As noted above, in testing this hypothesis, we included two control variables (judgments of industry profitability and volatility) along with the judgment of industry interest/excitement. The two control variables provided judgmental measures of industry factors that quite plausibly could impact the creditworthiness of firms. The remaining variable, industry excitement, reflects the excitement construct from Hypothesis 3 and should not influence creditworthiness positively. Consistent with Hypothesis 3, the more exciting an industry was perceived to be, the less likely it was that a firm's loan risk would be overrated and the more likely it was that it would be underrated ($p < .001$). Note that in addition to industry excitement, the parameter on industry profitability was marginally

significant ($p < .10$). The remaining industry perceptual measure (volatility) had no significant influence on errors in risk ratings. Therefore, the data support Hypothesis 3.

Drawing on both organizational and cognitive arguments, we hypothesized that prior performance levels have a negative influence on risk-rating errors: that bankers in branches with lower performance (risk-seeking) would underrate the risk of loans and that bankers in branches with higher performance (risk-avoiding) would overrate the risk. Contrary to Hypothesis 4, branch performance level did not appear to influence the risk ratings of loans. Thus, we conclude that Hypothesis 4 was not supported.

From organizational arguments concerning standardization, we hypothesized that bias in the ratings (i.e., the likelihood of overrating risk) in loan portfolios would change as the degree of standardization in the loan review process increased (Hypothesis 5). Given statements top managers in the bank made to us and to the popular press, we specifically expected to find that as standardization increased, the bank would become more conservative and more likely to overrate the risk of loans. In fact, we found modest evidence that as standardization increased, the likelihood that a loan would be underrated increased and the likelihood that it would be overrated decreased ($p < .05$).

This finding may have reflected changes in the bank's willingness to admit under- or overratings. Managers told us that the emphasis on avoiding losses or recognizing potential losses had increased over the last few years. This suggests that as standardization increased, lending officers may have become more willing to admit that a loan should be downgraded and more reluctant to argue that a borrower should be upgraded. To assess this question, we took all observations in which the bank's and the model's risk ratings disagreed and divided them into two groups: cases of the bank's risk ratings moving toward the model's and cases of the bank's risk ratings not doing so. We then conducted two binomial logistic regression analyses, one with the observations in which the bank's risk ratings were initially higher than the model's and one with the opposite cases. We found that as standardization increased, the likelihood that the bankers would move their risk ratings toward the model's increased for observations that were initially rated more favorably ($\chi^2 = 3.83$, $p = .05$) but decreased for observations that were initially rated less favorably ($\chi^2 = 2.73$, $p = .10$). Therefore, the evidence suggests that the standardization efforts did not cause lenders to become more conservative in their risk ratings, but it did increase the likelihood that they would admit that loan risk ratings needed to be downgraded.

Our final hypothesis was that standardization should reduce the prevalence of errors (Hypothesis 6). The results of the binomial logistic regression used to test this hypothesis appear in Table 3. Standardization had no significant influence on the prevalence of risk-rating errors ($p = .44$).

Supplementary Analysis

One concern about the results presented above derives from the construction of the dependent variable. Its reliance on the predictive model and

TABLE 3
Results from the Two-Category Logistic Regression Analysis[a]

Independent Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Probability
Intercept	1.66	0.44	14.31	0.00
Standardization	−0.07	0.09	0.60	0.44

[a] $N = 523$. For the test that all covariates except the intercept equal zero, $\chi^2 = .61$, $p = .44$, n.s.

a somewhat complex categorization raises concerns. Furthermore, classifying observations as nonerrors when the model and bank disagreed but the bank did not change might have resulted in underestimation of the number of errors. Consequently, we conducted additional analyses using different dependent variables to examine the robustness of our findings.

Above all, the bank wanted to avoid classifying a loan as acceptable when it really should have been unacceptable. As noted above, the bank rated loans on a scale of 1 to 7, with risk ratings of 1 through 4 deemed acceptable and ratings of 5 through 7 deemed unacceptable. A rating of 5 to 7 resulted in additional monitoring and additional loan loss reserves, which directly reduce income. If a loan switched from acceptable to unacceptable between time t and time $t + 1$, there was a reasonable probability that the bank had underrated its riskiness at time t. Therefore, in this analysis, we took all loans in risk categories 1 to 4 (acceptable) at time t and tested whether the variables used in the primary analysis could differentiate between those that remained acceptable and those that moved to unacceptable at time $t + 1$.

Table 4 presents the results from this analysis. These results support those of the primary analysis. Duration of the relationship, loan size, indus-

TABLE 4
Discriminating between Good and Bad Loans: Results from the Logistic Regression Analysis[a, b]

Independent Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Probability
Intercept	1.19	2.19	0.29	0.59
Duration of relationship	−0.06	0.02	9.21	0.00
Loan amount	0.49	0.17	7.87	0.01
Industry profitability	−2.11	0.59	12.83	0.00
Industry volatility	0.12	0.45	0.07	0.79
Industry excitement	0.78	0.37	4.57	0.03
Branch performance	−0.11	0.13	0.72	0.40
Standardization	0.57	0.21	7.13	0.01

[a] The dependent variable is the appropriateness of acceptable risk ratings at time t; loan risk too low = 1, loan risk appropriate = 0.

[b] $N = 459$, with 418 observations in category 0 and 41 observations in category 1. For the test that all covariates except the intercept equal zero, $\chi^2 = 41.91$, 7 df, $p < .0001$.

try excitement, and the degree of standardization in the loan review process all have the same significant results as in the prior analysis. Thus, by looking at loans that appear to have received underratings of risk, we find additional support for the effect of organizational pressure for profitability, the fads-and-fashions effect, and the effect of increased standardization.

This additional support can be bolstered by further analysis. Loans that switched from acceptable to unacceptable might have been underrated at time t or might have been correctly rated at time t but increased in risk within the next year for some reason. We divided observations that switched from acceptable to unacceptable into two groups: loans that the model had rated acceptable at time t and loans that the model had rated unacceptable at time t. If both a banker and the model rated the loan acceptable at time t, we could not assume the loan was misrated; the real risk the borrower presented probably changed from time t to $t + 1$. But for loans the model classified as unacceptable, we have additional confidence that the change reflected correction of an error.

We conducted two additional analyses. First, we defined a binary dependent variable that equaled 1 for loans that changed from acceptable to unacceptable between times t and $t + 1$ and that the model identified as *unacceptable* at time t. The variable equaled 0 for all other observations. Estimating the same explanatory variables as in previous analyses, we found the duration, loan size, and industry excitement variables were all significant ($p < .05$) in differentiating between loans that remained acceptable and loans that we strongly believed were underrated by the bank at time t.

For the second analysis, we defined a binary dependent variable that equaled 1 for loans that changed from acceptable to unacceptable between times t and $t + 1$ and that the model identified as *acceptable* at time t. The variable equaled 0 for all other observations. Estimating the same explanatory variables as in the previous analyses, we found only the standardization variable was significant ($p < .05$). The other variables of interest were all insignificant ($p > .10$).

These analyses demonstrate the robustness of the findings of the earlier analysis. These two additional ways of identifying loan rating "errors" (using all changes from acceptable to unacceptable, and using changes from acceptable to unacceptable that had been identified by the model as unacceptable) both agree with the original results based on the model. In all three measures of errors, we found consistent support for duration, loan size, industry excitement, and standardization effects. We also found some additional support for the contention that the standardization effort within the bank had caused lenders to become more open to admitting deterioration in borrowers' risk levels.

DISCUSSION

This study extends previous work examining the factors that affect risky decision making by testing their influence in nonexperimental data gener-

ated by actual business activities—actual managers conducting their normal business. Our study of commercial lenders' risk assessments of borrowers suggests that both cognitive and organizational factors influence the degree of error found in risk assessments in commercial lending.

Organizational pressure for profitability appeared to influence the risk ratings that borrowers received. Newer borrowers were more likely to receive overly favorable risk ratings than borrowers with longer relationships with the bank, and larger loans tended to receive overly favorable assessments. Both of these factors relate to the organizational pressure to generate loan volume and thus to meet profit goals. Interestingly, the finding for duration contradicts the idea of ambiguity avoidance (Ellsberg, 1961), and the finding for loan size is inconsistent with Kahneman and Lovallo's (1993) argument regarding constant risk aversion across loan size. Therefore, our findings support the contention that organizational effects can sometimes overcome psychological effects in normal business decision making. This finding agrees with earlier studies' (Bromiley, 1987; March & Shapira, 1987) findings that organizational pressures significantly influence managers' assessments of risky decisions. These findings also suggest that although profit motives are ubiquitous and necessary within organizations, they may also unintentionally bias organizational decision-making processes.

Finding that organizational effects appear to dominate cognitive ones supports Schwarz's (1994) concern that biases found in behavioral decision theory studies reflect artifacts of experimental design. Schwarz (1994) implicitly assumed that once artifacts are eliminated, people will respond quite reasonably to risk situations. But much of what Schwarz called artifactual (e.g., the order of presentation of information and its typographical layout) may really matter in organizations. For example, standard budget forms that display years across the top and expenditure items in rows invite the reader to compare expenditures on specific items across years. In other words, Schwarz could be correct in arguing that people respond quite reasonably to the situations they face, but since their organizations largely define that situation, organizational effects could still result in substantial biases in risk-related decision making.

We also found, to our surprise, that although the standardization of the loan review process influenced the distribution of risk-rating errors, it did not have the expected effects. As standardization increased, the decision makers did not become more conservative, nor did they become more accurate in their risk assessments. In fact, the initial analysis suggested that lenders became more likely to underestimate the risk of loans as standardization increased. However, further analyses suggested that this result may in fact reflect a greater willingness of the lenders studied to admit underestimations of risk and more reluctance to admit overestimations once the process they used became more standardized. Thus, the standardization effort appeared to have the intended effect of increasing the sensitivity of lenders to the risk their borrowers presented, but it did not do so as directly as we had first expected.

In addition to these organizational effects, the data also support our hypothesis that fads and fashions related to the degree of excitement an industry conveys influence the distribution of risk errors. The lenders tended to underrate the riskiness of loans to firms in exciting industries and to overrate the riskiness of loans to firms in unexciting industries. This pattern demonstrates how the addition of complex and subjective analysis by an expert (the banker) actually hurt the quality of the judgment. The sociocognitive effect of industry excitement might have been influential because no organizational effects existed to counter it. Furthermore, this effect occurred despite statements made by many loan officers that they avoided exciting industries because they were risky!

Finally, we found no support for the effect of organizational unit profitability differences on willingness to assume risk (Bowman, 1980, 1982, 1984; Bromiley, 1991; Fiegenbaum & Thomas, 1985, 1986, 1988; March & Shapira, 1987; Singh, 1986). Lending officers in branches with poorer performance appeared to be no more risk seeking than lenders in better-performing branches. Thus, the corporate effects relating to the risk propensity of poorly performing firms found in earlier studies do not appear to neatly transfer to the actual decisions made within this organization.

CONCLUSION

This article begins to address the gap between the experimental studies conducted by behavioral decision theorists and the studies of macro-organizational phenomena found in strategic management. We found that risk assessments in commercial lending were influenced by pressures for organizational subunit profitability (the length of the lending relationship and the size of the loan), the degree of standardization in the loan review process, and the fads-and-fashions effect (the degree of excitement a firm's industry conveyed), but not by branch performance levels. Although both cognitive and organizational variables influenced decision making in commercial lending, when the two forces appeared to compete, the organizational effects appeared to be more powerful than the cognitive effects. Thus, we can conclude that scholarly understanding of managerial behavior regarding risk-related decisions must include organizational influences in addition to the more commonly studied cognitive effects.

Interestingly, the primary organizational effect found resulted from informal rather than formal organizational influences. Branches informally translated branch-level profit goals into loan-growth rate targets. The bank's top management discouraged such translations, but branch managers continued to make them. In contrast, we observed modest effects from the formal organizational changes that occurred during the time period covered by the study. These findings suggest that some of the most powerful forces that affect decisions on risk in organizations arise from the informal practices that permeate those organizations.

Combined, these findings emphasize the complexity and difficulty of developing procedures to guide decision behavior. Organizational actions do influence decision behavior and can overcome individual cognitive biases, but organizational actions also have unintended effects. Specifically, the emphasis on profitability led to unwanted decisions. These findings relate to a question identified by Kahneman and Lovallo (1993): should top managers attempt to improve risk-related decision processes or accept such biases and attempt to develop counterbiasing forces? Our very tentative results suggest that either incentive systems or standardization can reduce organizational or cognitive biases, but managers must be very aware of unintended consequences.

Also, our findings demonstrate that organizational risk assessment differs from optimal assessment and is subject to biases. We would expect risk assessment to be more accurate in commercial lending than in the realm of strategic choice. Commercial lenders face similar well-structured problems repeatedly and receive relevant feedback, which means they should learn to assess more accurately than strategic decision makers, who face relatively few and highly idiosyncratic major strategic choices with very noisy and long-delayed feedback. If commercial lenders exhibit behavioral biases, we would certainly expect similar or stronger biases in more abstract strategic choices. Thus, the range of variables used to explain corporate risk taking may need to be expanded. We find it quite plausible, for example, that corporate decision makers underestimate the riskiness of exciting businesses and make systematic errors in comparing the riskiness of familiar and new businesses, just as our bankers did.

Although this study had the advantage of examining real and important business decisions, limitations clearly remain. First, as in all nonexperimental studies, the controls commonly available in experiments were unavailable here. Second, unlike a general large-sample financial study, this study used data from multiple branches of a single bank, which may limit its generalizability. Finally, having examined a very specific kind of risk assessment, we may lack the ability to generalize to risk assessment in the larger business population. However, we believe the positive aspects of the design compensate for these three drawbacks: the study uses real decisions by real employees, the risk measures come from managers rather than from secondary data, and, by studying a single organization, we control for "risk culture" effects that might otherwise cloud the results.

The results from this study constitute a tentative, early step into examining competing influences on organizational decision making. Future research should address additional cognitive and organizational effects in additional business environments. This study suggests that understanding managerial risk assessment requires examination of actual risk assessments made by managers and demonstrates the feasibility of such studies. This study represents a first step toward investigating the effect that behavioral factors have on actual decision makers doing their normal business tasks.

REFERENCES

Adams, S. 1976. The structure and dynamics of behavior in organizational boundary roles. In M. Dunnette (Ed.), ***Handbook of organizational and industrial psychology:*** 1175–1199. Chicago: Rand McNally.

Altman, E. 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. ***Journal of Finance,*** 23: 589–609.

Altman, E. 1984. The success of business failure prediction models: An international study. ***Journal of Banking and Finance,*** 8: 171–198.

Amit, R., & Livnat, J. 1988. Diversification and the risk-return trade-off. ***Academy of Management Journal,*** 31: 154–166.

Baron, J., & Hershey, J. C. 1988. Heuristics and biases in diagnostic reasoning: Priors, error costs, and test accuracy. ***Organizational Behavior and Human Decision Processes,*** 41: 259–279.

Beaver, W. H. 1966. Financial ratios as predictors of failure. ***Journal of Accounting Research,*** 4: 71–127.

Bettis, R. A., & Mahajan, V. 1985. Risk/return performance of diversified firms. ***Management Science,*** 31: 785–799.

Black, F. 1986. Noise. ***Journal of Finance,*** 41: 529–543.

Bower, J. 1970. ***Managing the resource allocation process.*** Division of Research, Graduate School of Business Administration, Harvard University, Boston.

Bowman, E. H. 1980. A risk/return paradox for strategic management. ***Sloan Management Review,*** 21(3): 17–31.

Bowman, E. H. 1982. Risk seeking by troubled firms. ***Sloan Management Review,*** 23(4): 33–42.

Bowman, E. H. 1984. Content analysis of annual reports for corporate strategy and risk. ***Interfaces,*** 14(1): 61–71.

Bromiley, P. 1987. Do forecasts produced by organizations reflect anchoring and adjustment? ***Journal of Forecasting,*** 6(3): 201–210.

Bromiley, P. 1991. Testing a causal model of corporate risk-taking and performance. ***Academy of Management Journal,*** 34: 37–59.

Bromiley, P., & Marcus, A. 1987. Deadlines, routines, and change. ***Policy Sciences,*** 20: 85–103.

Clarkson, G. P. 1962. ***Portfolio selection: A simulation of trust investment.*** Englewood Cliffs, NJ: Prentice-Hall.

Cohen, M. D. 1991. Individual learning and organizational routine: Emerging connections. ***Organizational Science,*** 2(1): 135–139.

Curley, S. P., Eraker, S. A., & Yates, J. F. 1984. An investigation of patients' reactions to therapeutic uncertainty. ***Medical Decision Making,*** 4: 501–511.

Curley, S. P., Yates, J. F., & Abrams, R. A. 1986. Psychological sources of ambiguity avoidance. ***Organizational Behavior and Human Decision Processes,*** 38: 230–256.

Cyert, R. M., & March, J. G. 1963. ***A behavioral theory of the firm:*** Englewood Cliffs, NJ: Prentice-Hall.

Dawes, R. M. 1971. A case study of graduate admissions: Application of three principles of human decision making. ***American Psychologist,*** 26: 180–188.

Edmister, R. O. 1972. An empirical test of financial ratio analysis for small business failure prediction. ***Journal of Finance and Quantitative Analysis,*** 7: 1477–1493.

Econometric Software. 1992. ***LIMDEP Version 6.0.*** Bellport, NY: Econometric Software.

Ellsberg, D. 1961. Risk, ambiguity, and the Savage axioms. ***Quarterly Journal of Economics,*** 75: 336–342.

Fiegenbaum, A. 1990. Prospect theory and the risk-return association: An empirical examination in 85 industries. ***Journal of Economic Behavior and Organization,*** 14: 187–204.

Fiegenbaum, A., & Thomas, H. 1985. An examination of the structural stability of Bowman's risk-return paradox. ***Academy of Management Proceedings:*** 7–10.

Fiegenbaum, A., & Thomas, H. 1986. Dynamic and risk measurement perspectives on Bowman's risk-return paradox for strategic management: An empirical study. ***Strategic Management Journal,*** 7: 395–408.

Fiegenbaum, A., & Thomas, H. 1988. Attitudes toward risk and the risk-return paradox: Prospect theory explanations. ***Academy of Management Journal,*** 31: 85–106.

Goldberg, L. R. 1970. Man versus model of man: A rationale, plus some evidence for a method of improving on clinical inferences. ***Psychological Bulletin,*** 73: 422–432.

Hoeven, J. A. 1979. Predicting default of small business loans. ***Journal of Commercial Bank Lending,*** 61(8): 47–60.

Hofer, C. W., & Schendel, D. 1978. ***Strategy formulation: Analytical concepts.*** St. Paul: West.

Hogarth, R., & Kunreuther, H. 1989. Risk, ambiguity and insurance. ***Journal of Risk and Uncertainty,*** 2(1): 5–35.

Hogarth, R., & Kunreuther, H. 1992. Pricing insurance and warranties: Ambiguity and correlated risks. ***The Geneva Papers on Risk and Insurance Theory,*** 17: 35–60.

Kahneman, D., & Lovallo, D. 1993. Timid decisions and bold forecasts: A cognitive perspective on risk taking. ***Management Science,*** 39(1): 17–31.

Kahneman, D., & Tversky, A. 1979. Prospect theory: An analysis of decision under risk. ***Econometrica,*** 47: 263–290.

Kunreuther, H., Hogarth, R., Meszaros, J., & Spranca, M. 1994. ***Ambiguity and underwriter decision processes.*** Working paper No. 274, Center for Decision Research, Graduate School of Business, University of Chicago.

Levinthal, D. A., & Fichman, M. 1988. Dynamics of interorganizational attachments: Auditor-client relationships. ***Administrative Science Quarterly,*** 33: 345–369.

Li, S., & Adams, A. S. 1995. Is there something more important behind framing? ***Organizational Behavior and Human Decision Processes,*** 62: 216–229.

Libby, R., & Fishburn, P. C. 1977. Behavioral models of risk taking in business decisions: A survey of evaluation. ***Journal of Accounting Research,*** 15: 272–292.

Macauley, S. 1963. Non-contractual relations in business. ***American Sociological Review,*** 28: 55–70.

MacCrimmon, K. R., & Wehrung, D. A. 1984. The risk in-basket. ***Journal of Business,*** 57: 367–387.

MacCrimmon, K. R., & Wehrung, D. A. 1985. A portfolio of risk measures. ***Theory and Decision,*** 19(1): 1–29.

MacCrimmon, K. R., & Wehrung, D. A. 1986. ***Taking risks: The management of uncertainty.*** New York: Free Press.

MacCrimmon, K. R., & Wehrung, D. A. 1990. Characteristics of risk taking executives. ***Management Science,*** 36: 422–435.

March, J. G., & Shapira, Z. 1987. Managerial perspectives on risk and risk taking. ***Management Science,*** 33: 1404–1418.

March, J. G., & Simon, H. A. 1958. ***Organizations.*** New York: Wiley.

McNamara, G. M., & Bromiley, P. 1993. Assessing the risk of small business borrowers. ***Journal of Commercial Lending,*** 76(2): 23–31.

Nelson, R. R., & Winter, S. G. 1982. ***An evolutionary theory of economic change.*** Cambridge, MA: Harvard University Press.

Ohlson, J. A. 1980. Financial ratios and the probabilistic prediction of bankruptcy. ***Journal of Accounting Research,*** 18: 109–131.

Porter, M. E. 1980. ***Competitive strategy.*** New York: Free Press.

Schwarz, N. 1994. Judgment in a social context: Biases, shortcomings and the logic of conversation. In M. P. Zanna (Ed.), ***Advances in experimental social psychology,*** vol. 26: 123–162. New York: Academic Press.

Shapira, Z. 1995. ***Risk taking: A managerial perspective.*** New York: Russell Sage Foundation.

Sharpe, S. A. 1990. Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships. ***Journal of Finance,*** 45: 1069–1087.

Shiller, R. J. 1984. Stock prices and social dynamics. ***Brookings Papers on Economics Activity,*** 2: 457–498.

Simon, H. A. 1977. On judging the plausibility of theories. In H. A. Simon (Ed.), ***Models of discovery:*** 25–45. Boston: D. Reidel.

Singh, J. V. 1986. Performance, slack, and risk taking in organizational decision making. ***Academy of Management Journal,*** 29: 562–585.

Swalm, R. O. 1966. Utility theory: Insights into risk taking. ***Harvard Business Review,*** 44(6): 123–136.

Van de Ven, A. H., & Ferry, D. L. 1980. ***Measuring and assessing organizations.*** New York: Wiley.

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ALTERNATIVE APPROACHES TO THE EMPLOYEE-ORGANIZATION RELATIONSHIP: DOES INVESTMENT IN EMPLOYEES PAY OFF?

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This article describes four approaches to the employee-organization relationship, as defined from the employer's perspective. An empirical study of employees from ten companies found support for the basic hypothesis that employee responses differ under the four types of relationship. In general, employees performed better on core tasks, demonstrated more citizenship behavior, and expressed a higher level of affective commitment to an employer when they worked in an overinvestment (by the employer) or mutual investment relationship than when they worked in a quasi-spot-contract or underinvestment relationship. These results were obtained even after we controlled for several other variables that could affect employee performance and attitudes.

"Increasing international competition and the rapid pace of technological change are favoring organizations that are lean, fast, and flexible" (Miles, 1989: 9). And Osterman observed that "in recent years, perhaps for the first time since the Depression, there are widespread indications that internal labor market structures are changing" (1988: 68). It is clear that external factors are forcing firms to alter their internal administrative and management structures. Specific changes include large-scale reduction of managerial and professional jobs (Buono & Bowditch, 1989), flattening of organizational levels (Harrison & Bluestone, 1988), externalization of work (Pfeffer & Baron, 1988), and development of new industrial relations systems (Arthur, 1992), management structures (Lawler, 1986, 1988), and employee governance systems (Mahoney & Watson, 1993).

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These types of changes have in turn spawned a variety of employment relationships (Arthur, 1992; Atchison, 1991; Lawler, 1988; Osterman, 1988; Walton, 1985) designed to maximize organizational flexibility while at the same time maintaining or increasing employee performance. Utilizing the ideas of inducement-contribution (Barnard, 1938; March & Simon, 1958) and extending the framework of Tsui, Pearce, Porter, and Hite (1995), we propose four basic approaches to the employment relationship that an employer can take. The first two approaches are intended to create distinct types of flexibility for an organization. One of these approaches is based on a pure economic exchange model and attempts to create a marketlike flexibility so that the employer is free to hire and fire workers. The other is based on a combined economic and social exchange model and attempts to create a clanlike flexibility by developing and encouraging employees to adopt permeable and expandable work roles. In exchange, the employer offers some degree of employment security to the employees. These two approaches are similar to employment relationships that have been described recently by a variety of authors (e.g., Arthur, 1992; Lawler, 1988; Mahoney & Watson, 1993; Osterman, 1988; Tsui et al., 1995).

These two contrasting employee-organization-relationship approaches represent prototypes of balanced exchanges. They are balanced in that the obligations of each party are either narrow and specified or broad and open ended. In practice, however, many organizations use mixed, or relatively "unbalanced," approaches that include components of both of the two balanced prototypes. In one of these unbalanced approaches, the employer desires flexible and expandable work behavior by employees but also attempts to retain its flexibility to hire and fire summarily. In the other, the employer provides relatively high employment security to employees, but expects only narrowly specified role behavior in exchange.

Is the desired flexibility actually being realized through these approaches? Taking a broader look at the impact of these approaches, in what ways are they affecting the nature and quality of employee performance and the attitudes employees hold toward the organizations? The current study was designed to answer these questions. To do this, we collected data from a large sample of employees in ten companies operating in competitive industries. The data were analyzed at the job and individual levels rather than at the firm level, on the assumption that employers may adopt different employment approaches for different jobs within a firm in order to achieve maximum flexibility for the firm as a whole (Tsui et al., 1995). We related each employer-defined employment approach used for employees in a particular job within a company to the performance and attitudes of employees in that job.

EMPLOYEE-ORGANIZATION RELATIONSHIP: A CONCEPTUAL ANALYSIS

Tsui and colleagues (1995) used the term employee-organization-relationship strategy to capture the employer's perspective on the employ-

ment relationship. An employee-organization-relationship strategy includes the employer's expectations about specific contributions that it desires from employees and the inducements that it uses to effect the desired contributions. The employee-organization relationship is different from a psychological contract (Levinson, Price, Munden, Mandl, & Solley, 1962; Kotter, 1973; Rousseau, 1995; Rousseau & Parks, 1993), which includes expectations about the nature of the exchange held by both employer and employee. Although employees' influence on and expectations of the relationship are important, we chose to focus on the employer's perspective in this study because (1) this is where most of the changes have been observed and (2) although some negotiations do occur, it is usually the employer who defines the bulk of the terms or content of employment contracts.

The primary conceptual foundation for our employee-organization-relationship framework is exchange theory or, more appropriately, exchange theories (cf. Blau, 1964; Ekeh, 1979; Pearce & Peters, 1985). Although the objectives and approaches of different exchange theories vary, they all share the assumption that a focus on exchange can provide insights into social processes. In discussing employer-defined employee-organization relationships, we focus on the "system" equity idea that Goodman (1974) proposed, in contrast to "internal" or "external" equity, concepts in which the referents for comparison are, respectively, employees inside or outside a given organization. According to Goodman (1974), the referent for system equity is the employing organization itself. Thus, our focus is on the degree of balance in the exchange between an employee and an organization. Further, we use "balance" rather than "equity" because equity implies a perception by employees. Our focus is on the relative balance between the inducements offered by an employer and the contributions expected of its employees, as defined from the employer's perspective.

Below, we describe the four different employer-defined employee-organization-relationship approaches, two involving largely balanced exchanges that Tsui and colleagues (1995) described in detail and that resemble models proposed by several other authors (e.g., Arthur, 1992; Lawler, 1988; Mahoney & Watson, 1993; Osterman, 1988), and two involving some form of imbalance. We offer several hypotheses on the relationship between the four approaches and employees' performance and attitudinal responses.

Balanced Employee-Organization-Relationship Approaches

Tsui and colleagues (1995), in a review of the employment relationship literature, identified two types of employee-organization relationship that involve relatively balanced exchanges between employee and employer. One type resembles a pure economic exchange. The employer offers short-term, purely economic inducements in exchange for well-specified contributions by the employee. A classic example of this type of employment relationship is that between a brokerage firm and a stockbroker. Here, the employee-organization relationship is defined in terms of specified activities for a set compensation. Neither party expects contributions or induce-

ments beyond those specified. For example, it is not expected that stockbrokers will help other employees in the company or be concerned about the firm's overall performance. Similarly, the employer's obligation to the employee is confined to rewards that are defined largely in monetary terms. Neither party—especially the employer—has an obligation to maintain a long-term relationship. The balance is in the fact that the exchange is relatively short-term and closed-ended for both parties, rather than in the economic value of what is being exchanged. We use the term *quasi spot contract* to describe this highly circumscribed employee-organization-relationship approach.

Analogous to this prototype are the industrial model described by Osterman (1988) and the cost control strategy described by Walton (1985). As Osterman explained, "In this model work is organized into a series of tightly defined jobs with clear work rules and responsibilities attached to each classification. Wages are attached to jobs" (1988: 64). Similarly, in the cost control strategy, "Employee attention is limited to performing the individual job" (Walton, 1985: 81). Earlier conceptual equivalents of this employee-organization-relationship approach include the utilitarian involvement idea (Etzioni, 1961) and the market mechanism (Ouchi, 1980).

As several authors have suggested (e.g., Davis-Blake & Uzzi, 1993; Osterman, 1988; Tsui et al., 1995), the quasi-spot-contract type of employee-organization relationship may be more appropriate for some jobs than for others. It may be especially appropriate where a performance contribution can be clearly defined and measured. Elsewhere, however, a spot contract may be highly inappropriate, and a more open-ended relationship may be desired. For example, Davis-Blake and Uzzi (1993) observed that jobs that are high in informational and technical complexity are less likely to be externalized (with contractors substituted for employees) than are other jobs. In the context of a high degree of environmental uncertainty and rapid change, it is difficult for an employer to know in advance what types of problems it will encounter in the future. Therefore, at least for job complexity and external adaptation reasons, the employer may find it advantageous to leave some obligations unspecified and to treat the employment relationship as a combination of economic and social exchange rather than as a purely economic exchange.

A basic and crucial distinction between economic and social exchange is that the latter entails unspecified, broad, and open-ended obligations on the part of both parties (Blau, 1986). In a social exchange relationship, the inducements an employer offers go beyond short-term monetary rewards. They include an extended consideration of an employee's well-being as well as an investment in the employee's career within the firm. In exchange, the employee's obligations and contributions include working on job assignments that fall outside of prior agreements or expertise, assisting junior colleagues, accepting job transfers when requested by the employer to do so, and, in general being willing to consider the unit's or the organization's interests as important as core job duties. The employee is also willing to

learn firm-specific skills that are not readily transferable to other employers because he or she trusts that such investments will be reciprocated over the long term. This is a balanced exchange relationship because it involves some degree of open-ended and long-term investment in each other by *both* the employee and the employer. We refer to this as the *mutual investment* employee-organization-relationship approach.

Analogous to this type of employee-organization relationship is the salaried model described by Osterman (1988), the high involvement approach advocated by Lawler (1986, 1988), the commitment strategy of Walton (1985), and the employee commitment system described by Arthur (1992). There are several earlier conceptual equivalents of this approach, including the normative involvement idea advanced by Etzioni (1961) and the employment relationship found in the clan (Ouchi, 1980), among others.

Unbalanced Employee-Organization-Relationship Approaches

The two types of employee-organization relationship just described reflect balanced exchanges in which the obligations of each party are matched (i.e., a closed-ended and short-term economic exchange, and an economic and social exchange that is open-ended and long-term). It is possible, however, for two unbalanced employee-organization-relationship approaches to exist. In some employment relationships, the employee is expected to undertake broad and open-ended obligations, while the employer reciprocates with short-term and specified monetary rewards, with no commitment to a long-term relationship or investment in the employee's training or career. We use the term *underinvestment* to describe such an unbalanced relationship. In a contrasting type of unbalanced employee-organization relationship, the employee performs only a well-specified set of job-focused activities, but the employer offers open-ended and broad-ranging rewards, including training and a commitment to provide the employee with career opportunities. We use the term *overinvestment* to refer to this second unbalanced employee-organization relationship.

The employee-organization relationships of many employers in competitive industries can be characterized as the underinvestment type because these employers desire full commitment from employees but at the same time want the flexibility to lay off employees virtually at will. This approach appears to be more favorable to employers than to employees. Other organizations adopt an approach that is seemingly more favorable to employees. Employees in organizations bound by trade union contracts, and some government bureaucracies, are managed by what may be considered the overinvestment approach. Some employees in these organizations have enjoyed relatively high employment security and have received considerable training investments from the employers without necessarily being expected to make contributions that go beyond their immediate jobs.

Employee Performance Responses to Different Employer-Defined Employee-Organization Relationships

In the quasi spot contract, the employee's attention is directed to a set of closed-ended tasks and toward specified rewards that are fully contingent upon satisfactory performance of those tasks. The employee is not expected to, and in fact may be discouraged from, engaging in activities beyond those specified so that his or her undivided attention can be given to the core job. Thus, we would anticipate specified task performance to be particularly high under this employee-organization relationship. Here, a critical assumption is that the employer can define the core tasks either in terms of activities or outcome.

However, we do not predict similar high performance for employees in the overinvestment employee-organization relationship, where they are also expected to devote their attention primarily or solely to core job duties. Under this approach, the situation is similar to that of the "overpayment" condition described by Adams (1965). Even though the organization's investment is higher than it is in the quasi spot contract, recipients tend to rationalize the overpayment, and thus the favorable exchange does not serve as an incentive to perform exceptionally well. In contrast, in the underinvestment relationship, employees are not likely to perform their core tasks well for two other reasons. First, they are expected to devote some of their attention to open-ended task activities, and second, there is no expectation of employment security. Therefore, they may not perform well because they get little payoff for doing so or because they want to restore some level of psychological equity to the relationship (Adams, 1965). Finally, in the mutual investment employee-organization relationship, employees' attention is divided between performance on the core job and activities that are beneficial to the larger unit to which they belong. Given this broad involvement in the organization, these employees' contributions on basic tasks should, by definition, be lower than those of employees under the quasi-spot-contract employee-organization relationship. However, because the employer's performance expectation is high, employees under the mutual investment approach should perform better on core tasks than employees under the overinvestment approach.

Drawing on the above rationale, we propose the following hypothesis on the relationship between the four employee-organization-relationship approaches and employees' performance on basic tasks:

> *Hypothesis 1. Employees' performance on core tasks will be the highest in the quasi-spot-contract employee-organization relationship, second highest with mutual investment, and third highest with overinvestment. It will be the lowest in the underinvestment employee-organization relationship.*

Although core task performance may be the highest with the quasi spot contract, we expect employees working under this employee-organization

relationship to demonstrate a relatively low level of organizational citizenship behavior because such open-ended behaviors are neither specified nor expected. Similarly, citizenship behaviors are also likely to be low in the overinvestment employee-organization relationship because such behaviors are, again, not expected of employees under this approach. In the underinvestment arrangement, the employer expects employees to be attentive to the continuing well-being of the larger unit or organization. However, employees can be laid off on short notice by the employer. Therefore, employees are not likely to engage in activities that go beyond their immediate tasks (e.g., citizenship behavior), employing one way to restore balance in this "underpayment" condition (Adams, 1965). It is in the mutual investment employee-organization relationship that relatively high levels of citizenship behavior should be anticipated. In this relationship, employees enjoy extensive and open-ended rewards, including employment security and career-enhancing investments on the part of the employer. In exchange, the employer expects employees to attend to the broad interests and needs of the organization as well as to the requirements of their immediate jobs. Thus, in this open-ended relationship, employees should be more likely to be cooperative, to assist others often, to suggest ideas that improve overall operations frequently, and generally to be motivated to protect the interests of the larger organization. Given these assumptions, the following is hypothesized:

> *Hypothesis 2. Organizational citizenship behaviors will be higher under the mutual investment employee-organization relationship than under the other three employee-organization-relationship approaches.*

In addition to differing on core task performance and organizational citizenship behavior, employees under the four employee-organization-relationship approaches are also assumed to differ in the dependability of their organizational participation. Two forms of such dependability are long-term continuance of employment and reliable day-to-day work attendance. Both voluntary turnover (Mobley, 1982) and unexcused absences from work (Rhodes & Steers, 1990) can be extremely costly to an employer. By offering rewards such as commitment to extensive training and relatively high employment security, the employer in return expects contributions from employees, including dependable participation on both a short-term and a long-term basis. Therefore, we would expect that employees will respond to the overinvestment and mutual investment employee-organization relationships with the highest levels of dependable participation, especially over the long term.

In general, it seems reasonable to expect that employees under the overinvestment approach will be the least likely to want to leave their employers since they have a "good deal." And indeed, employee turnover in, for example, government bureaucracies is often quite low, perhaps as a result of the employment security and generous benefits the employees enjoy. In the mutual investment employee-organization relationship, there is an interest-

ing dynamic regarding the continuance of employment by employees. The broader contributions expected of employees under this approach may also actually serve to increase the likelihood of their continuing employment. Broad contributions, such as gaining firm-specific skills and helping coworkers, can be conceived as investments, or sunk costs, on the part of employees, and such investments tend to engender continuance commitment (Becker, 1960).

Employee intentions to continue employment are not assumed by the employer under the quasi-spot-contract employee-organization relationship. Under this approach, an employee usually has the understanding (which is either implicitly conveyed or explicitly stated by the employer) that the employment relationship entails no promise of future employment. Therefore, we would expect these employees to have a relatively low level of intent to continue employment with the employer. Under the underinvestment approach, where the exchange is less favorable to the employee than to the employer, the employee is most likely to leave the firm as soon as alternative employment options are available. The following hypothesis summarizes the relationship between the four employee-organization-relationship approaches and dependable continuance of employment by employees:

> *Hypothesis 3. Dependable continuance of employment by employees (intentions to stay) will be lowest in the underinvestment employee-organization relationship, next lowest under the quasi spot contract, and next lowest under mutual investment. It will be the highest in the overinvestment employee-organization relationship.*

Although employees' continuation of employment may be the highest in the case of the overinvestment employee-organization relationship, these employees may not demonstrate a high level of attendance, because of the generous leave and other attendance benefits that are characteristic of employers in government and quasi-monopolistic firms. Schlotzhauer and Rosse (1985), for instance, reported that number of paid sick days was a predictor of days absent. Thus, the literature suggests that the use of paid sick days is another way that employees may take advantage of the open-ended rewards offered in this approach. But employees under mutual and underinvestment employee-organization relationships should have higher attendance because of the expectation, defined in the employment relationship by the employer, that employees will be there when needed, work overtime if the employer wants them to, and will show overall commitment by being physically present at work on a consistent basis. Peer pressure should be highest in the mutual investment arrangement (Barker, 1993; Lawler, 1988), where employees are more likely to feel that the employer's open-ended commitment to them should be reciprocated. Under the quasi-spot-contract approach, attendance is expected to be governed by the explicit contract. Attendance, therefore, may not be a relevant performance

factor for many spot-contract workers, unless dependable attendance is explicitly specified. With these analyses, we develop the following hypothesis:

> *Hypothesis 4. Employee attendance will be highest in the mutual investment employee-organization relationship, next highest with underinvestment, and lowest in the overinvestment and quasi-spot-contract employee-organization relationships.*

Employee Attitudinal Responses to Employer-Defined Employee-Organization Relationships

Following Lawler (1988), Walton (1985), and Ouchi (1980), who distinguished between the two prototypical approaches, we expected employees to have differing affective responses to these employer-defined relationships. Even Williamson (1975) suggested that people in the relatively more open-ended employment relationship would have greater "quasi-moral involvement" than those in the purely economic exchange relationship of the market (cf. Pearce, 1993). Blau (1964) argued that social exchange engenders feelings of personal obligation, gratitude, and trust that pure economic exchange does not.

The employee-organization-relationship framework suggests that employees will be more affectively committed to an employer when the employer commits to a long-term relationship with the employees. A willingness to develop and maintain a long-term relationship is a key characteristic of a social, in contrast to an economic, exchange (Blau, 1986: 94). Further, "social exchanges are possible because actors orient their action toward a general norm of reciprocity" (Haas & Deseran, 1981: 3). Therefore, we would expect a higher level of affective commitment on the part of employees in overinvestment and mutual investment relationships, in which employers offer the open-ended inducements characteristic of social exchange, than we would expect in the other two types. Thus, it seems reasonable to hypothesize that:

> *Hypothesis 5. Affective commitment by employees to an employer will be highest under the mutual investment and overinvestment employee-organization-relationship approaches and lowest under the quasi-spot-contract and underinvestment approaches.*

Employee-organization relationships also may affect employees' fairness perceptions. Such perceptions should be especially low when the employment relationship is of the underinvestment type, in which employees are expected to make open-ended contributions that employers do not reciprocate. Although the relationship is unbalanced in the overinvestment relationship, we propose that employees are not likely to perceive unfairness, since the imbalance favors them and the experience of overpayment is a short-lived psychological state. In both the quasi-spot-contract and the

mutual investment employee-organization relationship, employees should perceive fairness because there is balance in the exchange. The following hypothesis compares the fairness perceptions of employees under each of the four approaches:

> *Hypothesis 6. Employees' perception of fairness will be lower in the underinvestment employee-organization relationship than in any of the other three employee-organization-relationship approaches.*

A potentially important attitudinal outcome resulting from the nature of the employment relationship is an employee's relationship with co-workers. In general, positive co-worker relationships are more important for employees whose obligations are broad and open-ended rather than narrowly circumscribed—that is, those in mutual and underinvestment employee-organization relationships. Under these two approaches, employers expect employees to take into account their units' (and implicitly, other employees') interests in addition to performing their own core tasks. This consideration is expected to foster an expectation of mutual assistance and trust among co-workers. Nevertheless, since employees' jobs are not secure in the underinvestment approach, they may consider themselves in potential competition with each other for limited employment opportunities in the organization, and this perception could damage co-worker trust (Barker, 1993; Pearce, Bigley, & Branyiczki, 1997). Therefore, co-worker relations would be especially strained under the underinvestment approach and the most positive under the mutual investment approach. Pearce, Branyiczki, and Bakacsi (1994) reported that employees working in organizations characterized by arbitrary treatment and motivation based on fear were more likely to distrust their peers—that is, they were more likely to turn *on* them than to turn *to* them. In another study, Pearce, Branyiczki, and Bigley (1995) presented data indicating that exploitation by employers was a significant predictor of distrust in co-workers.

Trust in co-workers also is not likely to occur among employees under either the quasi-spot-contract or the overinvestment employee-organization relationship, which do not foster or promote collaborative co-worker interaction or the development of trust. Thus, where an employee-organization relationship involves narrowly focused economic exchange (i.e., the quasi spot contract) and where co-worker relationships are not emphasized (i.e., overinvestment), we would expect employees to report less trust in their co-workers.

> *Hypothesis 7. Employees in mutual investment employee-organization relationships will report greater trust in co-workers than will employees in any of the other three types of employee-organization relationship.*

Table 1 summarizes the seven hypotheses. These hypotheses in total suggest that the mutual investment approach offers the most advantage to employers in terms of favorable employee performance and attitudes. The

underinvestment approach appears to have the most *dis*advantages in terms of employee performance and attitudes. The major and sole potential advantage to an employer in using a quasi spot contract is a high level of performance on core tasks. And overinvestment offers advantages on some outcomes, such as continuance of employment, but disadvantages on other outcomes, such as attendance.

METHODS

We assumed that firms would respond to the need for flexible working arrangements by adopting multiple approaches to the employee-organization relationship across jobs. Therefore, to obtain firms that might be using more than one approach, we sampled only companies in competitive industries. Concentration ratios and ownership changes over a five-year period were used to identify ten industries (specified at the four-digit Standard Industrial Classification [SIC] code level) that were defined as facing high levels of competitive pressure. For each industry, a set of firms that each had at least 1,000 employees was identified. Ten companies in five industries agreed to participate: two companies each in computer manufacturing (SIC 3571), electronics and semiconductors (SIC 3674), and telecommunication

TABLE 1
Summary of Hypotheses on the Relationship between Employer-Defined Employee-Organization-Relationship Approaches and Employee Performance and Attitude Responses

	Employee-Organization-Relationship Approach[a]			
Employee Response	Quasi Spot Contract	Under-investment	Over-investment	Mutual Investment
Performance				
Hypothesis 1. Basic task performance	1	4	3	2
Hypothesis 2. Citizenship behavior	4	4	4	1
Hypothesis 3. Dependable continuance of employment	3	4	1	2
Hypothesis 4. Dependable attendance	4	2	4	1
Attitudes				
Hypothesis 5. Affective commitment	4	4	1	1
Hypothesis 6. Perceived fairness	1	4	1	1
Hypothesis 7. Trust in co-workers	4	4	4	1

[a] Numerals in the body of the table indicate predicted level, with 1 designating the most favorable and 4 designating the least favorable response.

(SIC 4813); three companies in food and groceries (SIC 5140); and one in apparel (SIC 5311). The sample is not representative of companies in each of the five industries; however, in sampling employees from more than one company and from more than one industry, our intent was to rule out the possibility of company- or industry-specific findings.

Employee Sample

The study was conducted at the individual and job levels. We tested hypotheses using only permanent employees. Part-time employees and independent contractors were excluded. We also excluded union employees earning hourly wages in order to examine employment relationships that were not influenced by collective bargaining agreements. Thus, our sampling strategy should give a more conservative test of the hypotheses than a strategy whereby these other types of workers were also included. The sample consisted of 976 employees who occupied 85 different jobs across the ten companies. To ensure that there was a range of jobs that could be candidates for the different employee-organization-relationship approaches, we asked the human resource directors of the companies to select a range of jobs varying in terms of the ease with which the performance of employees in these jobs could be evaluated.

For each job, the names of the supervisors who managed the employees performing the job were obtained. For each supervisor, we randomly selected several employees to be part of the initial sample; the number chosen ranged from a minimum of 3 to a maximum of 12. This process yielded an initial sample of 1,637 employees, of whom 976 participated in the study, representing a response rate of 60 percent. In addition, 205 supervisors (representing a 64 percent response rate) also participated in the study. However, not all employees who were rated by their supervisors returned their surveys, and not all employees who completed a survey were rated by their superiors or peers. Therefore, the actual size of the sample for testing the performance hypotheses differed from that for testing the hypotheses on the attitudinal outcomes. Using "listwise" deletion of missing data, we had complete data on 453 employees for testing the hypotheses on performance outcomes and complete data on 757 employees for testing the hypotheses on the attitudinal outcomes. A comparison of the demographic profiles (age, company tenure, race, sex, and education) of the employees with performance data and those without performance data revealed no difference between the two groups. Table 2 summarizes the demographic profile of the employee sample.

Data Collection Procedure

Written surveys were used to collect data, independently, from employees and supervisors. Envelopes containing the blank surveys were sealed and marked "confidential." In order to match responses from supervisors and employees, we coded the surveys. Self-addressed stamped envelopes bearing our university address were provided for the return of completed

TABLE 2
Demographic Characteristics of Employees

Variable[a]	Mean	s.d.	*n*	Percentage
Age	39.43	8.76	937	
Company tenure	9.12	7.83	946	
Education	14.98	2.31	940	
Gender				
Men			613	65
Women			333	35
Race				
White			821	87
Nonwhite			119	13

[a] Values for age, company tenure, and education are expressed in years.

surveys in all cases. The complete confidentiality of completed surveys was guaranteed to all respondents.

The supervisors provided data on the employee-organization-relationship approach used in a given job. They also provided ratings on three performance measures for each of three employees who were randomly selected from all the employees sampled in a given job. Each of the three employees also rated the other two employees (i.e., their co-workers) on the same performance measures. Finally, employees provided data on their attendance records and attitudes. This data collection procedure was designed to avoid common method variance by obtaining data on the independent and dependent variables from different sources. It also provided ratings of employee performance from two sources (i.e., supervisor and peers).

Measures

The hypotheses called for one independent variable (the employee-organization-relationship approaches) and seven dependent variables (four performance and three attitudinal measures). In addition, we included measures of a number of control variables for use in the data analyses.

Employee-organization relationship. This variable was categorical to represent the four approaches. The four categories were defined by two dimensions: (1) employer-expected employee contributions and (2) inducements offered by the employer to the employees. Employee contribution was measured by the extent to which an employer encouraged, through human resources practices, employees to focus their attention on their work units in addition to performance in their own jobs. Three human resource practices were used to measure this dimension, employee unit focus (see Table 3 for items). Employer investment was measured by the extent to which an employer invested in the employees in terms of training and employment security. Four human resource practices were used to measure this dimension. Supervisors ($n = 205$) were asked the extent to which each practice "may be used by [your] company for employees in this job category." Possible responses ranged from 0, "not used," to 8, "used to a very large extent." A

factor analysis of these seven items using Kaiser's criterion and "varimax" rotation yielded two factors with clean loading patterns. Table 3 shows the factor loading of the seven items. The reliability coefficient for the employee-unit-focus scale was .76, and for the employer investment scale, it was .79.

In order to define employee-organization relationship at the job level, we used the average of the supervisors' ratings of employee-organization relationship for the same job. Thirty-six jobs (out of a total of 85) involved multiple supervisors (ranging from 2 to 17). For these 36 jobs, we computed a one-way analysis of variance (ANOVA) using the job category as the classification variable and the supervisors' ratings on the two employee-organization-relationship dimensions as the dependent variables. For the employee-unit-focus dimension, the F was 1.85 ($p < .01$, $R^2 = .33$), and for the employer investment dimension, the F was 3.71 ($p < .01$, $R^2 = .50$). These results suggest that there was more agreement among supervisors' ratings of the employee-organization-relationship approach for employees in the same job than there was among supervisors managing different jobs. Thus, it was appropriate to aggregate the ratings of the employee-organization-relationship dimensions among supervisors overseeing the same job to derive a job-level score. Therefore, for the 36 jobs involving multiple supervisors, we averaged the supervisors' ratings for each of the two employee-organization-relationship dimensions, using the mean of the items comprising each scale as the score for the scale. Hence, for these jobs, employee-organization-relationship scores are not idiosyncratic to supervisors. However, for the remaining jobs, the employee-organization-relationship scores are idiosyncratic to supervisors and may be inseparable from super-

TABLE 3
Results of Factor Analysis on Employee-Organization Relationship Items[a]

Dimensions and Items	1	2
Human resource practices focusing employee attention on unit		
1. Evaluates employees based on unit performance		.81
2. Rewards employees based on unit performance		.88
3. Assigns performance goals or standards that focus on employee's work group or unit		.78
Human resource practices indicating employer's investment in employee		
1. Trains employees on skills that prepare them for future jobs and career development	.77	
2. Provides career counseling and planning assistance to employees	.78	
3. Provides employees with employment security	.77	
4. Recruits employees from within the company	.67	
Eigenvalue	3.18	1.34
Percentage of variance explained	.45	.19
Alpha coefficient	.79	.76

[a] Employee-organization relationship was defined by the two dimensions shown, the first assessing employer-expected employee contributions, the second assessing employer-offered inducements.

visory behavior. Thus, we included a supervisory support scale as a control variable to remove the influence of idiosyncratic supervisory behavior.

We used the supervisors' ratings on the two dimensions (employee unit focus and employer investment) to create the four employee-organization-relationship approaches. A median split was performed on each dimension. Jobs with scores below the median on both dimensions were defined as being managed by the quasi-spot-contract approach. Jobs with scores above the median on employee unit focus but below the median on employer investment were defined as being managed by the underinvestment approach. Jobs with scores below the median on employee unit focus but above the median on employer investment were defined as being managed by the overinvestment approach. Finally, jobs with scores above the median on both dimensions were defined as showing the mutual investment approach. Note that we used this median split to create an approximation of a theoretically defined categorical measure (Dubin, 1978). By using a continuous scale on each of the two dimensions, we attempted to attain a more refined response from supervisors and to achieve a more accurate placement of jobs under each employee-organization-relationship type than we would have obtained by asking supervisors to select one among a set of four choices.

This categorization produced the following distribution of employee-organization relationships across the 85 jobs: 31 percent of the jobs involved quasi spot contracts; 18 percent, underinvestment; 18 percent, overinvestment; and 33 percent, mutual investment. Thus, there was a greater use of the two balanced employee-organization-relationship approaches (64%) than of the two unbalanced approaches among the ten employers. A cross-tabulation of approach by company confirmed our assumption that firms in competitive industries used multiple employee-organization-relationship approaches (different ones for different jobs). In nine of the ten companies, all four employee-organization relationships were found. The remaining company used three approaches.

Employee performance. Items for performance outcomes were selected to differentiate between core tasks and activities falling outside of those tasks (i.e., citizenship behavior). Given that the specific nature of employees' tasks varies widely with their jobs, organizations, and industries, we developed or selected items that were generic rather than specific to one particular job. Six items focusing on the quantity, quality, and efficiency of employees were developed to measure basic task performance. On these items, raters (supervisors or peers) indicated the extent to which they agreed that the employee's performance on the core job was higher than that of other employees in a similar job. The response scale ranged from 1, "strongly disagree," to 7, "strongly agree." We also used five additional items adapted from Greenhaus, Parasuraman, and Wormley (1990) to measure core task performance. They focused on an individual's overall ability, judgment, accuracy, job knowledge, and creativity in performing his or her assigned role. Raters also responded to these items using a seven-point scale, ranging from 1, "unsatisfactory," to 7, "excellent."

Items assessing citizenship behavior were pooled from a variety of sources, including Graham (1986), O'Reilly and Chatman (1986), Smith, Organ, and Near (1983), and Gregersen (1989). We selected nine items that measure citizenship behaviors directed at improving an organization (see Table 4). The rater (supervisor or peer) indicated the extent to which he or she agreed that the employee exhibited the citizenship behavior described by the item. The same seven-point agree-disagree response scale used for rating core job performance was used.

Dependable continuation of employment by employees (referred to as "dependable continuance"), as perceived by supervisors and peers, was measured by three items that correspond to the intent-to-stay idea found in the behavioral commitment literature (Steers, 1977). The rater indicated the

TABLE 4
Results of Confirmatory Factor Analysis of Performance Items

Items	Factors		
	1	2	3
Dependable continuance			
1. Likely to leave this organization within the next 12 months	.83		
2. Likely to leave this organization within the next three years	.77		
3. Would probably change jobs if offered a bit more money	.77		
Citizenship behavior			
1. Makes suggestions to improve work procedures		.83	
2. Expresses opinions honestly when others think differently		.72	
3. Does not keep doubts about a work issue to him/herself, even when everyone else disagrees		.65	
4. Makes suggestions to improve organization		.87	
5. Calls management attention to dysfunctional activities		.79	
6. Makes innovative suggestions to improve department		.86	
7. Informs management of potentially unproductive policies and practices		.77	
8. Is willing to speak up when policy does not contribute to goal achievement of department		.80	
9. Suggests revisions in work to achieve organizational or departmental objectives		.83	
Basic task performance			
1. Employee's quantity of work is higher than average			.83
2. The quality of work is much higher than average			.88
3. The employee's efficiency is much higher than average			.85
4. Employee's standards of work quality are higher than the formal standards for this job			.86
5. Employee strives for higher quality work than required			.86
6. Employee upholds highest professional standards			.80
7. Employee's ability to perform core job tasks			.85
8. Employee's judgment when performing core job tasks			.84
9. Employee's accuracy when performing core job tasks			.82
10. Employee's job knowledge with reference to core job tasks			.75
11. Employee's creativity when performing core tasks			.78
Alpha coefficient	.83	.94	.96

extent of his or her agreement with a statement on a seven-point scale. Dependable attendance was measured by employees' reports of the frequency of unexcused absences. Tsui, Egan, and O'Reilly (1992) suggested that frequency of absences is one of the better measures of attendance found in the absenteeism literature.

A confirmatory factor analysis was performed on the 23 rating items (not including frequency of absence) that measure the three forms of performance. The result supported a three-factor structure, with an adjusted goodness-of-fit index (GFI) of .99 and a root-mean-square residual (RMSR) of .04. The internal consistency reliability of the three scales ranged from .83 to .96. Table 4 shows the standardized solution of this confirmatory factor analysis.

The average of the supervisor and peer ratings on each performance measure was used as the dependent variable in testing Hypotheses 1, 2, and 3. The three ratings (one superior and two peer ratings) were significantly correlated ($p < .001$). With the ratings from the three sources used as items, the Cronbach's alpha for the core task performance scale was .67; for citizenship behavior, it was .60; and for dependable continuance, it was .77. Peers' knowledge of a ratee's work (based on their being in the same job as the ratee) and extensive opportunities to observe (from being in the same work group or unit) may account for the high level of agreement between their ratings and those of the supervisors. Frequency of absences was the dependent variable for Hypothesis 4.

Attitude measures. Affective commitment was measured by the affective subset of the organizational commitment scale reported in Angle and Perry (1981). This subscale does not include the intent-to-stay dimension that we have defined as dependable continuance. Responses were recorded on a seven-point scale, from 1 for "strongly disagree" to 7 for "strongly agree." All attitude items are reported in Table 5.

To obtain an overall fairness perception measure, we compiled a list of 16 items from some existing measures (Folger & Konovsky, 1989; Leventhal, 1980; Lind & Tyler, 1988; Thibaut & Walker, 1975) and added a few other items. In the end, the scale consisted of items reflecting different types of fairness issues (e.g., pay, promotion, evaluation decisions) as well as both the procedural and distributive aspects of fairness. A seven-point response scale was used, ranging from 1, "strongly disagree," to 7, "strongly agree."

A third attitude measure is employees' trust in co-workers. A five-item scale (Pearce et al., 1997) was used. This scale measured the extent to which employees perceived that their co-workers could be relied upon and had integrity. A seven-point agree-disagree response scale was used as well.

Control variables. Since employee-organization relationship was measured at the job level, a potential confound was supervisory behavior toward employees in a given job. It has been argued, for example, that much of the evolving employment contract between an individual and an organization derives from the relationship between the individual and his or her immediate supervisor (e.g., Farh, Podsakoff, & Organ, 1990). To examine the unique effect of the employer-defined employment relationship for a

TABLE 5
Results of Confirmatory Factor Analysis of Attitude Items

Items	Factors 1	2	3	4
Affective commitment				
1. I am willing to put in effort beyond the norm for the success of the organization.	.50			
2. I talk up this organization to my friends as a great place to work for.	.82			
3. I find that my values and the organization's values are very similar.	.78			
4. I am proud to tell others that I am part of this organization.	.83			
5. This organization inspires the very best in the way of job performance.	.88			
6. I am extremely glad to have chosen this organization to work for over other organizations.	.81			
7. I would accept almost any type of job to keep working for this organization.	.53			
8. I really care about the fate of this organization.	.66			
9. For me this is the best of all possible organizations for which to work.	.85			
Perceived fairness				
1. The process used to conduct my performance appraisal is fair.		.76		
2. The process used to determine my salary is fair.		.70		
3. The process used to make decisions about my promotions or job changes within this organization is fair.		.81		
4. The process used to address any concerns or complaints I voice about this organization is fair.		.79		
5. I am satisfied with the way my performance appraisals are conducted in this organization.		.81		
6. I am satisfied with the process used to address any concerns or complaints I voice about this organization.		.80		
7. I am satisfied with the process used to make decisions about my promotions or job changes with the organization.		.85		
8. I am satisified with the process used to determine my salary.		.72		
9. The rating or evaluation I received on my last performance appraisal was fair.		.64		
10. The amount of pay that I receive is fair.		.64		
11. The decisions made about my promotions or job changes within this organization are fair.		.82		
12. If I voice my concern or disagreement about something in this organization, the organization's resulting actions or response are fair.		.83		
13. The rating or evaluation I received on my last performance appraisal reflected what I deserved.		.65		

TABLE 5 (continued)

Items	Factors 1	2	3	4
14. If I voice my concern or disagreement about something in this organization, the organization's resulting actions or responses reflect what I deserve.		.80		
15. The decisions made about my promotions or job changes within this organization reflect what I deserve.		.81		
16. The amount of pay that I receive reflects the amount that I deserve.		.67		
Supervisory support				
1. My supervisor seems willing to listen to my problems.			.83	
2. My supervisor is considerate of subordinate's feelings.			.75	
3. I can rely on my supervisor.			.87	
4. My supervisor is friendly.			.71	
5. I don't really feel that my supervisor and I are working toward shared or team objectives.			−.71	
6. My supervisor seems to be rather distant and unapproachable.			−.67	
7. Supervisors and subordinates have confidence in one another.			.82	
Trust in co-workers				
1. I can rely on those I work with in this group.				.75
2. There is no "team spirit" in my group.				−.80
3. We are usually considerate of one another's feelings in this work group.				.74
4. We have confidence in one another in this group.				.83
5. Members of my work group show a great deal of integrity.				.81
Alpha coefficient	.95	.91	.90	.88

specific job, it is important to control for the effect of individual supervisors. This control variable was measured by seven items from the supervisory supportiveness scale developed by Pearce, Sommer, Morris, and Frideger (1992). The scale describes the extent to which a supervisor is supportive of a subordinate and is approachable. The seven-point agree-disagree response scale described above was used.

Since the data on the three attitude scales and supervisory support were all obtained from the employees, we conducted a confirmatory factor analysis of the 37 items that make up the four scales to check for construct independence. The results were in strong support of the four-factor structure. The adjusted GFI was .98, and the RMSR was .06. Table 5 presents the standardized solution of this confirmatory factor analysis. The internal consistency reliability estimates of the four scales ranged from .88 to .95.

Employee-organization relationship may also vary with job level. It is likely that higher-level jobs involve different employee-organization relationships than lower-level jobs because of differences in the informational and interpersonal complexity of the two types of jobs, as described in Davis-Blake and Uzzi (1993). Further, employees in higher-level jobs may differ systematically in terms of attitudes from employees in lower-level jobs. Therefore, we included job level as a control variable and measured it by having two independent coders rate the level of each job on the basis of the job titles provided by the companies' human resources executives. Examples of job titles rated are customer services representative, software engineering manager, buyer, systems analyst, distribution center employee, tax-planning manager, and so on. The two coders coded the titles into three levels: managerial (3), professional (2), and technical (1). Initial agreement was obtained on 81 of the 85 jobs (95%). Upon discussion, the coders also reached agreement on the remaining four jobs. Most of the jobs were coded as professional (65%), with managerial (32%) and technical (7%) following. In average salary data we obtained from five companies on 46 jobs, the correlation between coded job level and the average salary of employees in these jobs was .46 ($p < .001$). Excluding one outlier, the correlation was .56 ($p < .001$).

A variety of individual difference factors may also affect employee performance and attitudes. Age, educational level, and company tenure are often considered to be human capital factors that influence employee performance on the job. These variables also have been found to be related to motivation to continue employment and to attendance behavior. Gender and race may influence attendance and fairness perceptions. Given these possible relationships, we controlled for these individual-level variables in estimating the net effect of the employer-defined employee-organization relationship on employee responses.

Finally, we included company as a control variable. Different companies may have different overall postures toward employees or idiosyncratic corporate cultures. By including company as a control variable, we aimed to assess the net effect of employee-organization relationship at the job level. Because of the small number of companies sampled in each industry, when

controlling for company, we were essentially taking industry effect into account.

Analyses

First, the mean performance and attitude scores for employees under each of the four employee-organization-relationship approaches were obtained. We used one-way ANOVA with Duncan's multiple range test to review differences on each outcome variable among the four groups. We conducted this analysis to see if the means on the seven outcome variables were ordered under the four employee-organization-relationship approaches in the hypothesized directions (shown in Table 1). Then, we included all the control variables (five employee demographic variables, job level, supervisory support, and company) in the analyses to determine the effect of employee-organization relationship after other factors that may influence employee performance or attitude had been accounted for.[1] We first used multivariate analysis of covariance (MANCOVA) to estimate the effect of employee-organization relationship on all the performance variables as a set or on all the attitude variables as a set. Finally, we used analysis of covariance (ANCOVA) to estimate the effect of employee-organization relationship on each dependent variable after accounting for the effects of the control variables.[2]

RESULTS

The basic findings of the study relevant to each hypothesis are shown in Table 6 and are presented in the following sections. We then present analyses that include the effects of the control variables; results are shown in Tables 7 and 8.

Primary Findings

Table 6 shows the mean performance and attitude scores for employees in jobs managed under each of the four employee-organization-relationship approaches. The ANOVA F was significant on all seven outcome variables. Hypothesis 1, which predicts that employees will have the highest performance on core tasks in the quasi spot contract and the next highest under mutual investment, overinvestment, and underinvestment, respectively,

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[1] Because the independent variable was obtained from the supervisors and there may be a potential confound between this variable and other aspects of supervisory behavior, we computed the correlations among the two dimensions of the employee-organization-relationship concept and the control variables. The correlations among these variables do not suggest a multicollinearity problem.

[2] ANCOVA assumes homogeneous regression slopes (of the covariates) across experimental conditions on the dependent variable. We checked this assumption by a Chow test (Greene, 1990), comparing the sum of squares of residuals for the individual regressions (between the control variables and each dependent variable) for each of the four employee-organization-relationship groups and then for the total group (four groups pooled).

TABLE 6
Employee Performance and Attitudes under Four Employer-Defined Employee-Organization-Relationship Approaches[a]

Employee Outcomes	Hypothesis	Employee-Organization-Relationship Approach: Quasi Spot Contract	Underinvestment	Overinvestment	Mutual Investment	ANOVA *F*
Performance						
Basic task performance	1					
Mean		4.87_a	$4.88_{a,b}$	$5.16_{b,c}$	5.22_c	6.58***
s.d.		1.02	1.12	0.91	0.92	
n		300	97	104	223	
Citizenship behavior	2					
Mean		$4.89_{a,b}$	$4.77_{a,b}$	$5.09_{a,c}$	5.29_c	10.48***
s.d.		1.00	1.15	0.84	0.81	
n		300	97	104	223	
Dependable continuance	3					
Mean		4.68_a	4.61_a	4.71_a	5.13	4.76**
s.d.		1.56	1.71	1.41	1.46	
n		297	97	103	224	
Frequency of absences	4					
Mean		1.81_a	2.05_a	$1.43_{a,b}$	1.07_b	5.49***
s.d.		2.44	2.36	1.58	1.47	
n		196	59	79	166	
Attitudes						
Affective commitment	5					
Mean		5.03_a	5.09_a	5.58_b	5.46_b	10.76***
s.d.		1.26	1.16	0.96	1.06	
n		363	130	113	227	
Perceived fairness	6					
Mean		3.95_a	4.05_a	4.40_b	4.50_b	10.11***
s.d.		1.27	1.36	1.16	1.24	
n		351	127	111	224	
Trust in co-workers	7					
Mean		5.16_a	5.07_a	$5.37_{a,b}$	5.43_b	3.66**
s.d.		1.23	1.38	1.24	1.11	
n		364	131	112	228	

[a] Means with the same subscript are not different from each other.
* $p < .05$
** $p < .01$
*** $p < .001$

was partially supported. However, the quasi spot contract, instead of yielding the highest levels of performance on core tasks, was associated with a low level of performance. That performance level was similar to that of employees working in underinvestment employee-organization relationships. The mutual investment and overinvestment approaches were, however, associated with the higher levels of performance. Thus, the ordering of

performance level by employee-organization-relationship approach was as predicted except for the position of the quasi-spot-contract approach.

Hypothesis 2, which predicts that mutual investment will result in the highest level of organizational citizenship behavior (OCB), was supported. The rated OCB under the mutual investment employee-organization relationship was significantly higher than that under the quasi-spot-contract or underinvestment approaches, but it was not significantly higher than that for the overinvestment employee-organization relationship.

Hypothesis 3, regarding employees' intentions about continuance of employment, was partially supported. The ordering of the four employee-organization-relationship approaches was as predicted, with the exception that it was the mutual investment rather than the overinvestment approach that was associated with the highest level of intent to stay.

Hypothesis 4 predicts that dependable attendance will be highest with the mutual investment approach, second highest with the underinvestment approach, and lowest with the other two approaches. As Table 6 shows, that ordering in fact occurred. However, the mean scores for the mutual investment and overinvestment approaches were not significantly different from each other. Thus, as with the previous hypotheses, there was general but not total support.

The next three hypotheses involve attitudes as dependent variables. The first of these, Hypothesis 5, was fully supported. Affective commitment to the organization was significantly higher among employees in the overinvestment and mutual investment employee-organization relationships than among those working in quasi-spot-contract and underinvestment circumstances.

Hypothesis 6, relating to perceptions of fairness, was only partially supported. Fairness perceptions among employees working in the mutual investment and overinvestment conditions were significantly higher than those of employees working in an underinvestment arrangement, as predicted. However, contrary to prediction, fairness perceptions were not significantly higher with the quasi-spot-contract than with the underinvestment approach.

Hypothesis 7 predicts that employees in the mutual investment employee-organization relationship will report greater trust in co-workers than will employees working in quasi-spot-contract, overinvestment, and underinvestment relationships. This pattern in fact occurred, although the difference in co-worker trust between the mutual investment and overinvestment employee-organization relationships was not statistically significant.

In summary, the overall pattern of results shown in Table 6 indicates that both mutual investment and overinvestment were associated with higher levels of performance and more favorable attitudes than either the underinvestment or quasi-spot-contract approach. Mutual investment resulted in the best performance, scoring the highest on all four measures. It also resulted in the best employee attitudes, scoring highest on two of the three measures and almost tying for highest on the other measure.

Analyses including the Control Variables

Results of the MANCOVA and ANCOVA procedures, which tested the main effect of employee-organization relationship after the effects of the eight control variables were removed, are shown in Table 7 for the performance measures and in Table 8 for the attitude measures.[3] The MANCOVA for the four performance variables is significant. The overall model accounted for 38 percent of the variance ($1 - \lambda$). The net effect by employee-organization relationship, after the control variables were considered, is also significant, accounting for 7 percent of the variance ($1 - \lambda$). The ANCOVA results, however, indicate that employee-organization relationship is significant for basic task performance and citizenship behavior, but not for dependable continuance and absences. In other words, the differences in means on the two dependability measures observed in the ANOVA analysis (Table 6) were not sustained after introduction of the covariates. Additional analyses revealed that older and longer-tenured employees were perceived to have the highest intent to stay; further, they reported the fewest absences, with women reporting more absences than men. However, since the assumption of homogeneity in the regression slopes for the covariates for this variable is not valid, some caution in interpretation is desirable. Nevertheless, further examination of the regression coefficients for the covariates in each regression model (for each employee-organization-relationship group) suggests that the signs are in the same direction, though some coefficients are significant while others are not. Supervisory support was associated with performance on core tasks and dependable continuance. The control variable for company was not significant for any of the four performance measures.

The MANCOVA results for the attitude variables (shown in Table 8) are also significant, with the overall model (including the controls) accounting for 41 percent ($1 - \lambda$) of the variance in the dependent variables. Employee-organization relationship accounted for 5 percent of the variance after entry of the controls. The ANCOVA results, however, indicate that employee-organization relationship differentiated responses on two of the three attitude variables. It was significant (after accounting for the controls) for affective commitment and perceived fairness but not for trust in co-workers. Additional analyses indicated that older employees expressed a higher level of affective commitment and trust in their co-workers than younger workers. Female employees reported lower fairness perceptions and less trust in co-workers than male employees. Employees in higher-level jobs (i.e., managerial, relative to both professional and technical) reported more affective commitment to, but less trust, in co-workers. Supervisory support was signifi-

[3] The F^* value from the Chow test suggested that the assumption of homogeneity was valid for three of the four performance variables but not for any of the attitude variables. Caution should be applied in interpreting the effects of the main independent variable as well as the results of the covariates where the homogeneity assumption was not satisfied.

TABLE 7
Results of MANCOVA and ANCOVA: Effects of Employer-Defined Employee-Organization-Relationship Approaches on Employee Performance[a]

(a) ANCOVA

Variables	Dependent Variables: Core Task	Citizenship Behavior	Dependable Continuance	Absences
Control variables				
Age	2.66	1.39	30.99***	10.84***
Company tenure	2.32	2.26	21.69***	5.92**
Education	0.01	0.69	0.04	0.02
Gender	0.45	0.03	0.18	22.09***
Race	1.80	4.39*	0.56	0.09
Job level	0.55	5.28*	0.00	1.62
Supervisory support	9.72**	2.32	13.80***	1.21
Company	0.40	0.03	3.48	3.17
Employee-organization relationship (eta squared)	5.91*** (.04)	3.49** (.04)	2.30 (.03)	2.33 (.02)
R^2 for overall effect	.08	.06	.15	.10

(b) MANCOVA

Test	Overall Effect	Net Effect by Employee-Organization Relationship
Hotelling's T	.36	.07
Wilks's λ	.72	.93
F_T	4.66***	2.71***
F_λ	4.88***	2.71***

[a] $N = 453$ employees.
** $p < .01$
*** $p < .001$

cant for all three attitude measures. The higher the perceived level of supervisory support, the more favorable were employee attitudes. Finally, the company variable was significant for all three attitude measures, indicating that employee attitudes vary systematically across companies. However, even after consideration of company differences, employee attitudes such as affective commitment and fairness perceptions could still be predicted from the job-level employee-organization-relationship approach, as defined by the employer.

DISCUSSION

The overall pattern of our results provides general support for what we have termed the mutual investment approach, where open-ended inducements provided by employers are balanced by open-ended contributions from employees. Employees under mutual investment employee-organization relationships generally performed better, as rated by both supervisors

TABLE 8
Results of MANCOVA and ANCOVA: Effects of Employer-Defined Employee-Organization-Relationship Approaches on Employee Attitudes

(a) ANCOVA

Variables	Dependent Variables: Psychological Commitment	Perceived Fairness	Trust in Co-workers
Control variables			
Age	14.31***	1.42	11.86***
Company tenure	1.72	7.14**	0.20
Education	12.21***	4.28*	3.18
Gender	0.19	13.56***	12.84***
Race	2.30	2.75	3.62*
Job level	5.20*	0.00	5.13*
Supervisory support	153.83***	294.72***	122.89***
Company	11.02***	13.56***	6.34**
Employee-organization relationship (eta squared)	7.42*** (.04)	6.63*** (.04)	2.04 (.01)
R^2 for overall effect	.23	.32	.19

(b) MANCOVA

Test	Overall Effect	Net Effect by Employee-Organization Relationship
Hotelling's T	.64	.05
Wilks's λ	.59	.95
F_T	19.95***	3.83***
F_λ	17.82***	3.81***

[a] $N = 757$ employees.
* $p < .05$
** $p < .01$
*** $p < .001$

and peers, and had more favorable attitudes than employees managed under any of the other three employee-organization-relationship approaches. The results in this study at the *job level* thus are highly consistent with both case studies and systematic accounts of similar approaches at the firm level. The mutual investment employee-organization relationship described here is similar to the high involvement system proposed by Lawler (1986, 1988, 1992), the commitment system discussed by Arthur (1992, 1994), and the salaried model reviewed by Osterman (1988), among others. For instance, Arthur (1994) found steel mills with "commitment" human resource systems to have higher productivity, lower scrap rates, and lower employee turnover than mills with "control" human resource systems. Lawler (1986, 1992) reported excellent economic performance for companies that adopted the high-involvement management approach. Our results show that, relative to employees in jobs characterized by any of the other three employee-organization-relationship approaches, employees in jobs characterized by mutual

investment demonstrated the highest levels of core task performance and organizational citizenship behavior. The mutual investment approach, involving a combination of social and economic exchange, seems to yield the most returns in terms of productivity at the job level as well as the firm level, as reported by others. The findings on the attitude measures also suggest that employees seem to react best to this type of employment relationship.

The overinvestment approach produced results that are quite similar to those of the mutual investment approach, with one exception: Employees under overinvestment conditions were perceived by their supervisors and peers to be less dependable in terms of continuation of employment than employees under mutual investment. This finding is surprising, especially given that we postulated that overinvestment employees have an arrangement "too good to be true." Perhaps employees view employer-defined overinvestment as temporary and as unlikely to last. Also, it may be that the broad contributions made by mutual investment employees bind them to their organizations more strongly (Becker, 1960). Further investigation of this perception is a useful topic for future research.

We found that the underinvestment employee-organization relationship produced the worst results on both employee performance and attitudes. Evidently, employees managed by this type of employer-defined employee-organization relationship reacted by reducing their performance on core tasks, by refraining from engaging in citizenship behavior, and by being absent more often than others. These findings suggest a real dilemma for employers who have great need for employee task performance and citizenship behavior contributions but may be unable to afford a mutual investment or overinvestment approach. The results of the current analysis suggest that in adopting an underinvestment or a quasi-spot-contract approach, employers may sacrifice employee performance. Although workforce reductions may lead to reduced labor costs, decreased employee performance and commitment under these employment approaches may have a negative effect on firms in the long term.

Why was the hypothesized superior core task performance on the part of employees under the quasi-spot-contract employee-organization relationship not realized? There could be several explanations. First, it could be that this employment arrangement is suitable only for types of jobs that are not represented sufficiently in the current sample. As defined, the quasi spot contract resembles firms' relationships with contractors, who are usually hired to work on tasks that are relatively circumscribed and have definable performance outputs. By not including true contractors in this sample, we reduced the power of our test. A second possibility is that regular employees usually have some expectation of a long-term relationship, and this expectation is clearly violated for employees in quasi-spot-contract employee-organization-relationship arrangements. If this assumption is valid, their reaction to their employers is not entirely surprising. Alternatively, another possibility is that employers who provide mutual investment relationships may be more attractive to employees and so may be able to pick and chose

the better performers. In any event, the question of why quasi-spot-contract employees did not perform best on core tasks in this study cannot be answered because of the limitation of the sample. Future research with a more comprehensive sample of all types of workers would be desirable to give a fair test of these possible explanations.

It is interesting that we found a significant company effect on the attitude measures. Employees in the ten companies varied on their psychological commitment, fairness perceptions, and trust in co-workers. These findings mean that other things about the companies (beyond those individual differences variables that were controlled) may influence employee attitudes. Yet, with the company-level factors (whatever they may be) controlled for via our company control variable, employee-organization-relationship approach at the job level provided additional information on employee attitudes. This company-level effect further strengthens the theoretical and empirical validity of the employee-organization-relationship concept.

A major management implication derived from the findings of this study is that an employee-organization-relationship approach must be chosen carefully. The approach taken must suit the needs of both the job and the employees being managed. In our study, for example, the quasi-spot-contract employee-organization relationship was being used to manage a variety of jobs. Perhaps the range of jobs appropriate to the quasi spot contract is narrower than organizational policy makers expect. It may be quite difficult to circumscribe responsibilities tightly and fully define outputs for employees, as opposed to contractors (Pearce, 1993). Some degree of interdependence may be needed in most jobs. Even more challenging is specifying performance outputs while protecting long-term organizational interests. What is interesting is that these difficulties may call into question the notion of the spot contract's being a balanced approach when used with employees who desire more than a concretely stipulated short-term relationship. Finally, the finding that both the mutual investment and the overinvestment approaches perform substantially better than the other two employee-organization relationships suggests that offering open-ended inducements and a high level of social exchange to employees is more important than balance in the exchange. This finding may have important implications for practice.

Limitations

One limitation of the current study is our operational definition of the employee-organization-relationship framework. The current definition of employee-organization relationship captures only one form of inducement by an employer—investment in employees in terms of training and employment security. It is possible that other types of inducements, such as wages, benefits, and promotions, may be equally or perhaps even more important in defining employee-organization relationships. Also, the contribution measure in our study captures only one element of broad, open-ended (vs. narrow, closed-ended) contribution: whether employees are supposed to focus their attention on the work unit in addition to, rather than instead of, per-

formance in their own jobs. Clearly, other dimensions of broad contribution, such as taking individual initiatives, exercising discretion in task decisions, and so forth, could be included in measuring this variable. Future research could explore the relevance and importance of other forms of inducements and contributions in defining the employee-organization relationship. Most likely, a combination of multiple forms on both the inducement and the contribution dimension of the employee-organization-relationship framework is essential. In other words, the employee-organization relationship is possibly configurational rather than unidimensional (Meyer, Tsui, & Hinings, 1993).

A second limitation is that our dependent variables were restricted to performance and attitudes assessed at the individual level. Group-level outcomes may be important for testing the proposed employee-organization-relationship framework. Group-level outcomes are especially meaningful when the contribution dimension is employee attention to group or unit performance, which is desired by employers adopting an overinvestment or mutual investment approach.

Last, an important limitation is that this study deliberately focused on employee-organization relationship as defined by one of the parties—the employer. For a complete picture, the employee side of the story will need to be incorporated. How do employees define the employment relationship? What are the important employer obligations, from the employee's perspective, and what do employees perceive to be their obligations to employers? How do employees define a fair or balanced exchange? What kinds of employees prefer the employment relationship to be a social versus a purely economic exchange, and vice versa? A comprehensive framework for understanding the employee-organization relationship will ultimately need to account for the employee's perspective as well as for the employer's viewpoint.

Conclusion

This study represents a relatively comprehensive attempt to investigate the performance and attitudinal responses of employees to alternative employer-defined employment relationships. As such, the study involved samples of employees drawn from ten different organizations in five different competitive industries, and explicit attention was given to utilizing adequate measures of key variables, to reducing potential problems associated with common method variance, and to providing extensive statistical controls. Although no single study can provide conclusive evidence on issues as complex as those examined here, the results obtained are encouraging and suggest several important topics for future research.

The findings from the current study suggest that employees seem to respond favorably in terms of both performance and attitudes when employers are willing to commit to fairly long-term relationships with them. The outcomes are most favorable when employers also direct employees' attention to group or unit performance, in addition to their own jobs. These results support increased use of involvement teams or self-managing groups

by employers. The benefits of this focus, however, cannot be realized unless employers are willing to offer some degree of employment security or career investment in employees. A variety of authors (e.g., Atchison, 1991; Lawler, 1986; Osterman, 1988; Strauss, 1987) have emphasized the importance of this policy of employer commitment. The results from this individual-level study provide evidence to support these views. In short, the employment flexibility of the quasi-spot-contract and the underinvestment approaches may involve a trade-off—reduced performance from employees. The mutual investment approach, in contrast, appears to provide deployment flexibility along with strong employee performance. Yet, as noted earlier, popular writings seem to indicate that many firms under competitive pressure have recently moved from using an overinvestment employee-organization relationship to using an underinvestment approach, at least in the short term. Although firms may need to rely upon underinvestment as a temporary means of weathering severe economic downturns, the results of the current study suggest that they should consider moving back toward the mutual investment approach in the long term to remain viable.

REFERENCES

Adams, J. S. 1965. Inequity in social exchange. In L. Berkowitz (Ed.), ***Advances in experimental social psychology,*** vol. 2: 267–300. New York: Academic Press.

Angle, H. L., & Perry, J. L. 1981. An empirical assessment of organizational commitment and organizational effectiveness. ***Administrative Science Quarterly,*** 26: 1–14.

Arthur, J. B. 1992. The link between business strategy and industrial relations systems in American steel minimills. ***Industrial and Labor Relations Review,*** 45: 488–506.

Arthur, J. B. 1994. Effects of human resource systems on manufacturing performance and turnover. ***Academy of Management Journal,*** 37: 670–687.

Atchison, T. J. 1991. The employment relationship: Un-tied or re-tied? ***Academy of Management Executive,*** 5(4): 52–62.

Barker, J. R. 1993. Tightening the iron cage: Concertive control in self-managing teams. ***Administrative Science Quarterly,*** 38: 408–437.

Barnard, C. I. 1938. ***The functions of the executive.*** Cambridge, MA: Harvard University Press.

Becker, H. S. 1960. Notes on the concept of commitment. ***American Journal of Sociology,*** 66: 32–40.

Blau, P. M. 1964. ***Exchange and power in social life.*** New Brunswick, NJ: Transaction Publishers.

Buono, A. F., & Bowditch, J. L. 1989. ***The human side of mergers and acquisitions: Managing collisions between people, cultures, and organizations.*** San Francisco: Jossey-Bass.

Davis-Blake, A., & Uzzi, B. 1993. Determinants of employment externalization: A study of temporary workers and independent contractors. ***Administrative Science Quarterly,*** 38: 195–223.

Dubin, R. 1978. ***Theory building*** (2nd ed.). New York: Free Press.

Ekeh, P. P. 1974. ***Social exchange theory: Two traditions.*** Cambridge, MA: Harvard University Press.

Etzioni, A. 1961. ***A comparative analysis of complex organizations.*** New York: Free Press.

Farh, J. L., Podsakoff, P. M., & Organ, D. W. 1990. Accounting for organizational citizenship behavior: Leader fairness and task scope versus satisfaction. ***Journal of Management,*** 16: 705–721.

Folger, R., & Konovsky, M. A. 1989. Effects of procedural and distributive justice on reactions to pay raise decisions. ***Academy of Management Journal,*** 32: 115–130.

Goodman, P. S. 1974. An examination of referents used in evaluations of pay. ***Organizational Behavior and Human Performance,*** 12: 170–195.

Graham, J. W. 1986. ***Organizational citizenship informed by political theory.*** Paper presented at the annual meeting of the Academy of Management, Chicago.

Greene, W. H. 1990. ***Econometric analysis.*** New York: Macmillan.

Greenhaus, J. H., Parasuraman, S., & Wormley, W. M. 1990. Effects of race on organizational experiences, job performance evaluations, and career outcomes. ***Academy of Management Journal,*** 33: 64–86.

Gregersen, H. B. 1989. ***Multiple commitments at work and their relationships with extra-role behavior.*** Working paper no. 89-8, Pennsylvania State University, Erie.

Haas, D. F., & Deseran, F. A. 1981. Trust and symbolic exchange. ***Social Psychology Quarterly,*** 44: 3–13.

Harrison, B., & Bluestone, B. 1988. ***The great U-turn: Corporate restructuring and the polarizing of America.*** New York: Basic Books.

Kotter, J. P. 1973. The psychological contract: Managing the joining-up process. ***California Management Review,*** 15(3): 91–99.

Lawler, E. E., III. 1986. ***High-involvement management.*** San Francisco: Jossey-Bass.

Lawler, E. E., III. 1988. Choosing an involvement strategy. ***Academy of Management Executive,*** 2(3): 197–204.

Lawler, E. E., III. 1992. ***The ultimate advantage: Creating the high-involvement organization.*** San Francisco: Jossey-Bass.

Leventhal, G. S. 1980. What should be done with equity theory? In K. J. Gergen, M. S. Greenberg, & R. H. Willis (Eds.), ***Social exchange: Advances in theory and research:*** 27–55. New York: Plenum Press.

Levinson, H., Price, C. R., Munden, K. J., Mandl, H. J., & Solley, C. M. 1962. ***Men, management and mental health.*** Cambridge, MA: Harvard University Press.

Lind, A. E., & Tyler, T. R. 1988. ***The social psychology of procedural justice.*** New York: Plenum Press.

Mahoney, T. A., & Watson, M. R. 1993. Evolving modes of workforce governance: An evaluation. In B. E. Kaufman & M. M. Kleiner (Eds.), ***Employee representation: Alternatives and future directions:*** 135–168. Madison, WI: Industrial Relations Research Association, University of Wisconsin.

March, J. G., & Simon, H. A. 1958. ***Organizations.*** New York: Wiley.

Meyer, A. D., Tsui, A. S., & Hinings, C. R. 1993. Configurational approaches to organizational analysis. ***Academy of Management Journal,*** 36: 1175–1195.

Miles, R. E. 1989. Adapting to technology and competition: A new industrial relations system for the 21st century. ***California Management Review,*** 31(2): 9–28.

Mobley, W. H. 1982. ***Employee turnover: Causes, consequences, and control.*** Reading, MA: Addison-Wesley.

O'Reilly, C., & Chatman, J. 1986. Organizational commitment and psychological attachment:

The effects of compliance, identification, and internalization on prosocial behavior. ***Journal of Applied Psychology,*** 71: 492–499.

Osterman, P. 1988. ***Employment futures: Reorganization, dislocation, and public policy.*** New York: Oxford University Press.

Ouchi, W. G. 1980. Markets, bureaucracies, and clans. ***Administrative Science Quarterly,*** 25: 129–141.

Pearce, J. L. 1993. Toward an organizational behavior of contract laborers: Their psychological involvement and effects on employee co-workers. ***Academy of Management Journal,*** 36: 1082–1096.

Pearce, J. L., Bigley, G. A., & Branyiczki, I. 1997. Procedural justice as modernism: Placing industrial/psychology in context. ***Applied Psychology: An International Review,*** 46: In press.

Pearce, J. L., Branyiczki, I., & Bakacsi, G. 1994 Person-based reward systems: A theory of organizational reward practices in reform-communist organizations. ***Journal of Organizational Behavior,*** 15: 261–282.

Pearce, J. L., Branyiczki, I., & Bigley, G. A. 1995. ***Insufficient bureaucracy: Trust and commitment in particularistic organizations.*** Working paper, Graduate School of Management, University of California, Irvine.

Pearce, J. L., & Peters, R. H. 1985. A contradictory norm view of employer-employee exchange. ***Journal of Management,*** 11: 19–30.

Pearce, J. L., Sommer, S. M., Morris, A., & Frideger, M. 1992. ***A configurational approach to interpersonal relations: Profiles of workplace social relations and task interdependence.*** Working paper no. OB92015, Graduate School of Management, University of California, Irvine.

Pfeffer, J., & Baron, J. N. 1988. Taking the workers back out: Recent trends in the structuring of employment. In B. M. Staw & L. L. Cummings (Eds.), ***Research in organizational behavior,*** vol. 10: 257–303. Greenwich, CT: JAI Press.

Rhodes, S. R., & Steers, R. M. 1990. ***Managing employee absenteeism.*** Reading, MA: Addison-Wesley.

Rousseau, D. M. 1995. ***Psychological contracts in organizations.*** Thousand Oaks, CA: Sage.

Rousseau, D. M., & Parks, J. M. 1993. The contracts of individuals and organizations. In B. M. Staw & L. L. Cummings (Eds.), ***Research in organizational behavior,*** vol. 15: 1–43. Greenwich, CT: JAI Press.

Schlotzhauer, D. L., & Rosse, J. G. 1985. A five-year study of a positive incentive absence control program. ***Personnel Psychology,*** 38: 575–585.

Smith, C. A., Organ, D. W., & Near, J. P. 1983. Organizational citizenship behavior: Its nature and antecedents. ***Journal of Applied Psychology,*** 68: 653–666.

Steers, R. M. 1977. Antecedents and outcomes of organizational commitment. ***Administrative Science Quarterly,*** 22: 46–56.

Strauss, G. 1987. The future of human resource management. In J. B. Mitchell (Ed.), ***The future of industrial relations:*** 91–117. Los Angeles: Institute of Industrial Relations, University of California.

Thibaut, J., & Walker, L. 1975. ***Procedural justice: A psychological analysis.*** Hillsdale, NJ: Erlbaum.

Tsui, A. S., Egan, T. D., & O'Reilly, C. A., III. 1992. Being different: Relational demography and organizational attachment. ***Administrative Science Quarterly,*** 37: 549–579.

Tsui, A. S., Pearce, J. L., Porter, L. W., & Hite, J. P. 1995. Choice of employee-organization

relationship: Influence of external and internal organizational factors. In G. R. Ferris (Ed.), ***Research in personnel and human resource management,*** vol. 13: 117–151. Greenwich, CT: JAI Press.

Walton, R. E. 1985. From control to commitment in the workplace. ***Harvard Business Review,*** 63(2): 77–84.

Williamson, O. E. 1975. ***Markets and hierarchies.*** New York: Free Press.

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A META-ANALYSIS OF THE EFFECTS OF ORGANIZATIONAL BEHAVIOR MODIFICATION ON TASK PERFORMANCE, 1975–95

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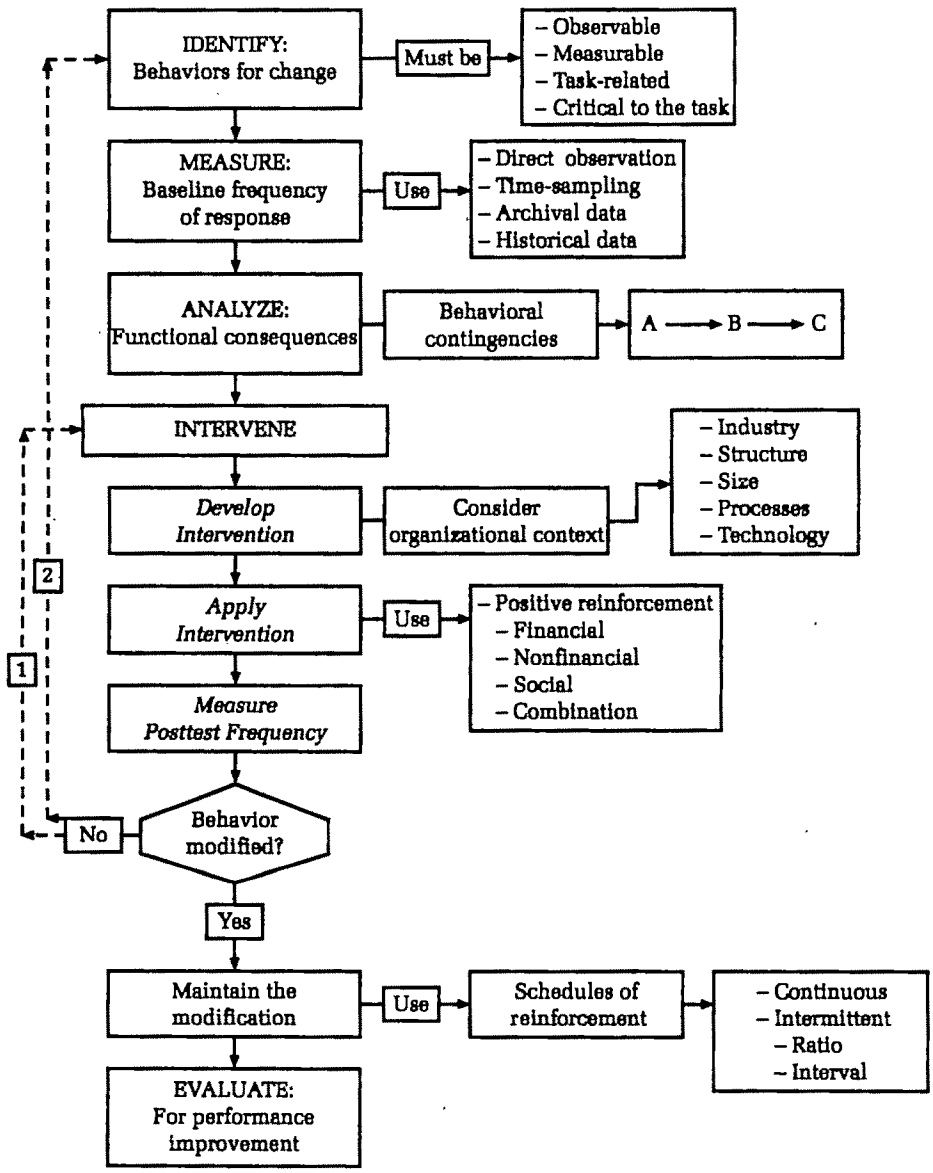
Results of a primary meta-analysis indicated a significant main effect of the organizational behavior modification (O.B. Mod.) approach on task performance (*d.* = .51; a 17 percent increase) and a significant treatment-by-study interaction. To account for within-group heterogeneity of effect sizes, we conducted a two-level theory-driven moderator analysis by partitioning the sample of studies first into manufacturing and service groups and then into seven classes of reinforcement interventions. Results indicated a stronger average effect of O.B. Mod. in manufacturing organizations, moderation by the type of contingent interventions, and "pairwise" differences among average effect sizes in both organizational types. The practical implications of these findings for solving the challenge of improving performance without adding cost are discussed.

Although the operant theoretical foundation for the application of behavioral analysis or behavior modification was established in the 1950s (Rogers & Skinner, 1956; Skinner, 1953), it has only been within the last 25 years that the basic reinforcement paradigm has been introduced to the study of organizational behavior and applied to human resource management (HRM) (Adam & Scott, 1971; Luthans & White, 1971; Nord, 1969). Among several application models proposed within this conceptual framework (e.g., Brethower, 1972; Gilbert, 1978; Komaki, 1986; Miller, 1978; Scott & Podsakoff, 1985), the organizational behavior modification (O.B. Mod.) model, first presented by Luthans (1973) and fully developed by Luthans and Kreitner (1975, 1985), has received considerable attention from both organizational behavior researchers (e.g., Andrasik, Heimberg, & McNamara, 1981; Frederiksen, 1982a, 1982b; Frederiksen & Johnson, 1981; O'Hara, Johnson, & Beehr, 1985) and HRM practitioners (cf. Andrasik, McNamara, & Edlund, 1981; Frederiksen & Lovett, 1980).

Based on the conceptual premises of classical behaviorism (Pavlov, 1927; Watson, 1913), reinforcement theory (Ferster & Skinner, 1957; Skinner, 1938, 1966, 1969), and the principles and techniques of applied behavioral analysis or behavior modification (Bandura, 1969; Ferster & Perrott, 1968; Kazdin, 1975; Wenrich, 1970), the O.B. Mod. model represents a behavioral approach to the management of human resources in organizational

settings. Specifically, the model provides a five-step application framework for identifying, measuring, analyzing, contingently intervening in, and evaluating employees' task-related behaviors aimed at performance improvement (Luthans & Kreitner, 1975, 1985). Figure 1 presents the O.B. Mod. model.

FIGURE 1
O.B. Mod. Application Model



Development of the O.B. Mod. model has generated a number of studies that have tested its effectiveness in a wide range of manufacturing, service, and not-for-profit organizations and in Western and other cultures (e.g., Welsh, Luthans, & Sommer, 1993b). The application of the O.B. Mod. approach has been shown to positively affect manufacturing productivity (e.g., Welsh et al., 1993a), sales performance (e.g., Luthans, Paul, & Baker, 1981), customer service (e.g., Luthans, Fox, & Davis, 1991), absenteeism and tardiness (e.g., Kempen, 1982), and safety (e.g., Haynes, Pine, & Fitch, 1982). Although there have been several conceptual reviews of behavioral management in general (e.g., O'Hara et al., 1985; Merwin, Thomason, & Sanford, 1989), no study to date has quantitatively synthesized, tested, compared, and evaluated the variations in O.B. Mod. effect magnitudes across the available studies.

The overall purpose of this study was to meta-analytically aggregate and analyze the research findings pertaining to the O.B. Mod. approach to performance improvement. Specifically, in a primary meta-analysis we investigated two research questions: (1) What is the average treatment effect for O.B. Mod. on task performance? and (2) Are there any study characteristics that systematically moderate the relationship between O.B. Mod. and task performance? Next, we summarized the conceptual evidence that guided our choice of moderators and then tested the derived hypotheses in the moderator analysis. The pairwise differences between moderator groups and among moderator classes were also examined. Drawing on implications of our analysis, we conclude by suggesting new directions for future research and by providing several guidelines for practical applications in the field of organizational behavior.

PRIMARY META-ANALYSIS

Identification of the Studies

The collection of studies was initiated by computerized searches of specialized databases, such as the *Business Periodicals Index, Psychlit,* the *Expanded Academic Index, Sociofile,* the *Social Science Index,* and *Dissertation Abstracts,* covering the published literature from 1975 to 1995. The key words used were *organizational behavior modification, O.B. Mod., organizational behavior management, behavior modification,* and *applied behavior analysis.* We manually searched for relevant articles that were not covered by computerized databases in the following journals: the *Academy of Management Journal,* the *Academy of Management Review,* the *Journal of Organizational Behavior Management,* the *Journal of Applied Behavioral Analysis,* the *Journal of Applied Behavioral Science,* the *Journal of Applied Psychology, Personnel Psychology, Psychological Bulletin, Psychological Review,* and the *Journal of Personality and Social Psychology.* We also conducted searches using the reference sections of conceptual reviews and books on organizational behavior management (e.g., Andrasik, 1979, 1989; Bobb & Kopp, 1978; Luthans & Kreitner, 1975, 1985; Luthans & Martinko,

1987; Mayhew, Enyart, & Cone, 1979; Merwin et al., 1989; O'Hara et al., 1985; Rapp, Carstensen, & Prue, 1983). In addition, unpublished manuscripts were solicited from a number of researchers in this field. The search was limited to articles in the English language.

Selection Criteria for Inclusion in the Analysis

Since the research on behavior modification has been conducted across various disciplines, we started by defining the boundaries of our work. This study is about the effects of O.B. Mod., as defined by Luthans and Kreitner (1975, 1985), on task performance in organizational settings. This definition places several limitations on the scope of the analysis.

First, to be included in this meta-analysis, a study was required to examine dependent variables in the form of *behavior-based task-performance* measures. We focused on task performance because the reinforcement theory background and principles of behavior modification on which the O.B. Mod. model is based postulate that every behavior identified for change must be: (1) observable, (2) measurable, (3) task-specific, and (4) performance-related (Luthans & Kreitner, 1975, 1985). Second, considering the overriding reinforcement theory assumption of O.B. Mod. that behavior is a function of its contingent consequences (Luthans & Kreitner, 1975; Skinner, 1966, 1969), a study was also required: (1) to demonstrate the use of one or more empirically distinguishable dimensions of a reinforcement modality (e.g., money, feedback, social praise), (2) to have the reinforcement contingently administered (e.g., only upon identified behavioral responses), and (3) to operationalize reinforcement contingencies as an external intervention (e.g., by a manager or researcher). This definition thus excludes antecedents for behavioral control (e.g., job design), random reinforcement, and self-generated rewards. Finally, a study was required to provide the minimum statistical information necessary to calculate effect sizes either directly or through mathematical transformations. If a report included several individual experiments, the corresponding number of effect sizes was calculated and included in the analysis. Out of 125 studies that satisfied the search criteria, 19 (15%) met the inclusion requirements: 14 published articles, 1 book chapter, 1 dissertation, and 3 unpublished manuscripts. We calculated 115 effect sizes, based on a total sample size of 2,818 subjects. The average sample size per effect was 25 subjects.

Effect-Size Estimation and Homogeneity Assumption

Calculating single effect sizes. Using the Hedges and Olkin (1985) meta-analytic method, we started the analysis by estimating the effect size for each study in the form of index *g*, using Hedges's (1986) notational system.[1] The

[1] In the case of research studies that did not report statistical estimates (e.g., $\overline{X}$s, *S*s) needed to directly calculate effect size *g*, we used computational adjustments provided by Hedges (1981, 1982a) and Rosenthal (1991, 1994) to transform different statistical indices to effect size *g*.

effect size g represents the mean difference between an experimental and a control group divided by the pooled standard deviation assumed to be common to both groups. Since for small samples ($n < 10$), g has a slight tendency to overestimate population effect size δ (Hedges & Olkin, 1985), we multiplied g with the correction factor provided by Hedges (1981), which gives an unbiased estimator (d). Hedges (1981) showed that the unbiased estimator d for every g has an approximately normal sampling distribution when all studies share a common effect size with the mean δ and variance v, where v is determined by the sample sizes and the value of d (cf. Hedges, 1986).

Combining estimates of effect sizes. Although one way to combine estimates of single effect sizes is to simply average the values of d, the more precise procedure is to combine them by calculating a weighted average effect size that incorporates variances v_i to v_k for each d_i to d_k (Hedges, 1986). Thus, to determine whether all studies shared the common effect size, we computed the weighted average effect size ($d.$) across k studies by weighting each effect size by the inverse of its variance. After determining the weighted average effect size ($d.$) and its variance ($v.$), we tested the hypothesis that the common population effect size δ was equal to zero by comparing the ratio $d.^2/v.^2$ to the chi-square distribution for one degree of freedom. In other words, we intended to determine if there was a significant main effect for the average treatment across k studies.

Testing for homogeneity of effect sizes. The weighted average effect size ($d.$) represents an unbiased estimate of the population effect size only if single effect-size magnitudes are consistent across all k studies examined. If single effect sizes do not deviate from each other by more than what is expected by chance, the estimates differ only by unsystematic sampling error, and one can conclude that the model of the single effect size fits the data adequately (Hedges, 1982b; Hedges & Olkin, 1985). However, significant heterogeneity of effect sizes across k studies indicates that differences in individual effect-size magnitudes may be large enough to cause rejection of the homogeneity hypothesis that single effect sizes are drawn from the same population (a significant treatment-by-study interaction; Hedges, 1986). To test for treatment-by-study interaction, we used the H_t homogeneity statistic (Hedges, 1982a, 1986), which represents the weighted sum of squares of the effect-size estimates d_i to d_k about the weighted mean ($d.$).

Outlier Analysis

Exclusion of single-case studies. Considering that the O.B. Mod. model has theoretical roots in Skinner's operant conditioning paradigm, it was no surprise to find that several studies that satisfied the criteria for inclusion in this meta-analysis reported multiple case studies each involving only one subject ($n = 1$). Although we recognize the idiosyncratic value of these experiments (cf. Luthans & Davis, 1982), we treated studies with one subject as sample-size outliers and excluded them from our study. The main reason for exclusion of single-case experiments was the strong possibility for capitalization on chance that would preclude reliable generalization of findings in

terms of external validity. Several methodological properties of Hedges and Olkin's (1985) meta-analytic method also contributed to the exclusion of single-case experiments from further analyses.[2]

Effect-size outliers and extreme values. To estimate the relative stability of unbiased effect-size magnitudes, we conducted schematic plot analysis (Light, Singer, & Willett, 1994), which indicated outliers and extreme values for the entire sample of k studies. Effect sizes positioned 1.5 to 3 lengths from the upper or lower edge of the 50 percent interquartile range (e.g., Tukey's hinges) were considered outliers, and those placed more than three lengths from the interquartile range were considered extreme values (e.g., Tukey, 1977). These limits corresponded to an effect-size value of 2.0, meaning that the average person in the control group would rise two standard deviations from the mean at the 98th percentile of the standard normal distribution after the treatment (cf. Glass, 1976). Although only a modest proportion of all effect sizes was deleted (10%), we followed the customary procedure for dealing with sample-size outliers by conducting two analyses, combining effect sizes with outliers and extreme values in one and omitting outliers and extremes in the other (e.g., Williams & Livingstone, 1994).

Results of the Primary Meta-Analysis

As indicated above, in combining the individual estimates of effect sizes to produce an overall estimate of effect magnitude $d.$ for the entire set of k studies, we performed two analyses, one with (set 1) and one without (set 2) effect-size outliers and extreme values. For the first set of studies, the one including outliers and extreme values, the value of the average unbiased effect size $d.$ was .95, with a variance $v.$ of .0005. The magnitude of this average effect size indicated the presence of a significant main effect of treatment across the k studies ($\chi^2_1 = 1{,}536.33$, $p < .05$). After removal of the outliers and extreme values in the second set of studies, the magnitude of the average unbiased effect size $d.$ was .51, with a variance $v.$ of .0006. The magnitude of this average effect size also indicated the presence of a significant main effect for treatment across the remaining k studies ($\chi^2_1 = 377.61$, $p < .05$).

On the basis of the test for within-group homogeneity of effect sizes, we rejected the homogeneity assumption ($H_t = 616.76$, $p < .05$), which was as

[2] First, since effect size g tends to slightly overestimate the population effect size δ for small samples ($n < 10$), we based our analysis on the unbiased estimator d, which provides a more reliable estimate of effect magnitude. Applying the correction factor necessary to compute d (Hedges, 1981) reduces the magnitude of g in every instance of small sample size except when $n = 1$, in which case the correction factor actually inflates the value of the already positively biased estimator g. Second, the nomographs for exact confidence intervals for population effect size δ when the lesser of n^e or n^c is less than 10 include the values for effect-size magnitude when $2 \leq n \leq 10$ (Hedges & Olkin, 1985), thus again excluding the possibility of $n = 1$. Third, when there are studies with sample-size outliers as extreme as $n = 1$, weighting the average effect-size estimate with the inverse of its variance will be unduly biased, considering the relatively greater sample estimate of variance based on single subjects.

expected, given the diverse attributes of the studies included in this meta-analysis. This finding suggested that: (1) single effect-size magnitudes were not consistent among each other, (2) there was significant treatment-by-study interaction, and, most importantly, (3) it was inappropriate to specify the predictive model by a single average estimate of effect size. Since significant heterogeneity of effect-size magnitudes was present, we engaged in a search for moderators by turning to theoretical explanations for potential sources of systematic variance among the examined studies.

THEORETICAL FOUNDATIONS OF O.B. MOD.

Reinforcement Theory

The single most important theoretical foundation for the development of the O.B. Mod. paradigm is operant learning or reinforcement theory (Ferster & Skinner, 1957; Komaki, 1986; Skinner, 1966). Largely based on Thorndike's (1913) law of effect, reinforcement theory finds the causal agents of human action in the functional relationship between environmental variables (antecedents and consequences) and the behavior they effect (Rogers & Skinner, 1956; Skinner, 1969). The arrangement of environmental conditions influences the behavioral response, and the knowledge of the relationship between behavior and its contingent consequences facilitates learning (Bandura, 1969). Considering the overall effectiveness of reinforcement theory, Vroom noted that "without a doubt the law of effect or principle of reinforcement must be included among the most substantiated findings of experimental psychology and is at the same time among the most useful findings for an applied psychology concerned with control of human behavior" (1964: 13).

In the application of reinforcement theory to modification of the behavior of organizational participants, antecedents (e.g., job design, training) of a desired behavior should be analyzed first to determine what factors functionally cue or set the occasion for that behavior to be "emitted" (e.g., Komaki, Blood, & Holder, 1980). However, antecedents assume stimulus control properties only in the presence of reinforcing contingent consequences, which in turn determine if a behavioral response will actually occur (e.g., Komaki, Collins, & Penn, 1982). In fact, as Bandura pointed out, "If people acted . . . on the basis of informative cues but remained unaffected by the results of their actions, they would be too insensible to survive very long" (1986: 228). Thus, identifying the reinforcing contingencies of the emitted behaviors is the critical process in the application of reinforcement theory to organizational settings.

Behavioral Systems Analysis

Considering its reinforcement theory background, the underlying assumption of O.B. Mod. is always the same: behavior is a function of its contingent consequences (Luthans & Kreitner, 1975, 1985). However, although this principle serves as a general guideline for O.B. Mod. applica-

tions across organizational settings, sufficient conceptual and empirical evidence has been generated to prevent scholars and practitioners from "presuming that one set of contingencies will work equivalently well across varied organizations" (Suzler-Azaroff, Pollack, & Fleming, 1992: 117). Mawhinney (1992) also argued that automatically applying one set of contingencies to distinct organizational settings would be a mistake since the extent to which certain behavioral interventions are effective depends on specific features of a particular organizational type.

The premise that the type of organization in which an application occurs may be causing differences in the effect magnitudes of O.B. Mod. is conceptually based upon behavioral systems analysis, which represents "a blend of behavior analysis and systems analysis perspectives in that the environment of interest for the behavioral systems analyst is generally a complex environment . . . and the behavior of interest is that which is controlled by that organizational environment" (Krapfl & Gasparotto, 1982: 24). In behavioral systems analysis, the network of operating reinforcers within an organization is examined to determine which application of various contingencies will be best supported by the organizational environment and which will be incongruent with the characteristics of the particular organizational type (Gilbert, 1978; Krapfl & Gasparotto, 1982). Especially important in this type of analysis is identifying the reinforcers inherent in a particular organizational setting, since intervening with reinforcers that are readily available and already congruent with distinct organizational features increases the chances for successful behavioral change (Stokes & Baer, 1977).

The combined characteristics of networks of reinforcing contingencies inherent to various organizational settings are assumed to be conceptually generalizable according to specific organizational types (Krapfl & Gasparotto, 1982; Luthans & Kreitner, 1985; Mawhinney, 1979, 1992; Mawhinney & Ford, 1977; Stokes & Baer, 1977; Suzler-Azaroff et al., 1992). In particular, the analysis of the availability and effects of different networks of reinforcing contingencies on task performance has usually been placed within the framework of manufacturing and service organizations (e.g., Bowen, Chase, & Cummings, 1990; Collier, 1990; Connellan, 1978; Luthans, 1988; Luthans & Davis, 1990; Mirman, 1982; Quinn & Gagnon, 1986; Riddle, 1986; Schneider & Bowen, 1993; Wikoff, Anderson, & Crowell, 1982). We next examine the specific features of manufacturing and service organizations that might cause systematic variations in the effect magnitudes of the O.B. Mod. interventions studied here.

Manufacturing versus Service Organizations

In comparison to manufacturing organizations, where productivity gains are mostly made through technological innovations (Quinn & Gagnon, 1986), service organizations are labor intensive, which poses special challenges in determining the most effective behavioral interventions (Heskett, 1986). Summarized broadly, key organizational characteristics that may cause differences in the effectiveness of various types of behavioral inter-

ventions in manufacturing and service organizations are: (1) the definition and possibility for accurate assessment of performance outcomes and (2) the nature of the task-performance and work processes involved in the delivery of performance outcomes (Collier, 1990; Luthans & Davis, 1990; Parasuraman, Zeithaml, & Berry, 1985; Suzler-Azaroff et al., 1992; Wikoff et al., 1982; Williams & Zigli, 1987).

Definition and assessment of performance outcomes. The complex evaluation problems in service organizations are mostly related to the (1) conceptual definition of service as a performance outcome and (2) operationalization of those definitions by practicing managers. In manufacturing organizations, the emphasis is on the production or assembly of tangible goods (Wikoff et al., 1982), but in service organizations, the emphasis is on service as the performance outcome (Parasuraman et al., 1985). The major difference between the two performance outcomes is that goods can be easily described and directly measured, whereas service usually contains a set of intangible and implicit attributes that are hard to define in operational terms (Sasser, Olsen, & Wyckoff, 1978). The amorphous nature of service as a performance outcome is exemplified in the following definition:

> A service can be an idea, entertainment, information, knowledge, change in the customers' appearance or health, social innovation, circumstance (being at the right place at the right time), convenience, . . . security, or any of a number of other things. Service may also be defined as a deed, a performance, a social event, or an effort and output that is consumed where it is produced (Collier, 1990: 237).

Practicing managers in service organizations are also not immune from adding to the problem of clearly defining service as a performance outcome. In contrast to manufacturing organizations, where managers usually speak of performance outcomes in precise and operational terms (e.g., product specifications, how to measure quantity or quality), in service organizations managers often speak of service in vague generalities or fiery slogans, which usually falsely imply that employees know exactly what to do (Luthans & Davis, 1990). For example, in a study examining the service behaviors of grocery store clerks, when the researchers asked the manager if he specifically outlined what he wanted employees to do, he replied that "they ought to know, since that was what they were getting paid to do" (Komaki, Waddell, & Pearce, 1977: 341).

Williams and Zigli pointed out that "progress is being made in defining service and service . . . parameters, but imprecision and manufacturing mentality make the task difficult" (1987: 14). This difficulty persists because managers in service organizations must be able to at the same time (1) understand the specific characteristics of the service as a construct, (2) identify and quantify explicit and intricate implicit components of the service content, and above all (3) assess and develop representative measures of service as a performance outcome construct. Thus, whereas in manufacturing organizations performance outcomes tend to be specified in observable and mea-

surable terms, performance outcomes in service organizations represent "an exciting challenge for management to quantify and measure . . . and integrate these intangible measures with the tangible attributes of the service" (Collier, 1990: 242).

Nature of the task-performance and work processes. Another difference between manufacturing and service organizations that may cause variations in the effects of behavioral interventions has to do with the accuracy of deciding what task performance to target for change (Riddle, 1986; Suzler-Azaroff et al., 1992). This is because task performance in manufacturing and service organizations involves the use of different work processes to successfully accomplish performance outcomes. In particular, in manufacturing organizations tasks usually involve well-defined production processes (usually based on some form of predefined engineering specifications) that workers need to follow and, in addition, some form of automation is often present to simplify task performance (Quinn & Gagnon, 1986). However, in service organizations tasks innately involve service delivery processes (Parasuraman et al., 1985), which have characteristics quite different from those of production processes. Service delivery has to do with meeting or exceeding customers' expectations, which involves a complex web of dual perceptions, those of the managers and those of the customers (Luthans, 1988, 1995).

Thus, the critical difference between the two processes is that there are many more ways to misspecify what constitutes a service delivery process than a production process. As Schneider and Bowen pointed out, "Many services . . . are judged for quality based on seemingly tangential cues experienced during the delivery process" (1993: 39). One of the major problems that can cause the mismanagement of service delivery processes is discrepancy between customers' expectations and perceptions of service delivery (Parasuraman et al., 1985). Specifically, if customers' perceptions of frontline service delivery do not match what they expected in terms of style or manner (Schneider & Bowen, 1993), they may exhibit negative overt reactions, which can in turn have punishing consequences for service employees (Luthans, 1988; Luthans & Davis, 1990). The possibility that such punishing consequences may "naturally" arise might cause service employees to assume that a job not well done will lead to negative contingencies and thus might attenuate the effects of originally applied behavioral interventions.

All these circumstances contribute to there being greater potential in service than in manufacturing organizations for the development of response patterns that might be incongruent with successful task performance. Thus, we hypothesize the following:

> *Hypothesis 1. The average effect magnitude of O.B. Mod. interventions in service organizations will be lower than the average effect magnitude of O.B. Mod. interventions in manufacturing organizations.*

Effect Variations of Types of Reinforcement Interventions

As Bandura convincingly argued, "Human behavior . . . cannot be fully understood without considering the regulatory influence of response consequences" (1986: 228). In fact, according to Bandura, that human behavior is influenced by its effects is not questioned in any theory that aspires to explanatory and predictive power. However, this does not imply that different reinforcing contingencies produce uniform effects, regardless of their content. Although not necessarily provided by a particular theory or stream of research, ample conceptual and empirical evidence suggests that different reinforcing contingencies may produce different effect magnitudes not only between groupings (as outlined above), but also within a particular grouping or classification, because of the differences in their unique reinforcing potential. In elaborating this premise, we largely drew from Bandura's (1986) conceptualization of the natures of different types of reinforcers and the related theoretical and empirical evidence (e.g., Kluger & DeNisi, 1996; Komaki et al., 1982; Komaki, Coombs, & Schepman, 1996; Luthans & Kreitner, 1975, 1985). This literature suggests that different types of reinforcement are likely to produce different effects based on differences in (1) their reinforcement values, (2) their informative content and subsequent utility, and (3) the mechanisms through which they operate. On the basis of these distinct characteristics, the various reinforcers used in behavior modification in organizational settings can be classified into the following types of interventions: (1) financial/monetary, (2) nonfinancial, (3) social, and (4) various combinations (simultaneous use) of two or more types of reinforcement.

Financial Reinforcement

The underlying characteristic of all financially based reinforcers is that organizations are directly or indirectly required to provide monetary contingencies. These usually include cash payments, although other financial rewards, such as prizes (commonly used in sales work), time off, and paid vacations have also been examined (see Merwin et al. [1989] for a review). The common value of all financial reinforcers is derived from the fact that they ultimately lead to some form of tangible payoff (Bandura, 1986). In particular, money becomes a reinforcer because it can be exchanged for other desirable consequences (e.g., goods, services) or effects (e.g., privileges) (Komaki et al., 1996), whereas other financial consequences (e.g., prizes) can reinforce because of the immediate benefits their contents provide. Another common characteristic (or better yet, deficiency) of financial reinforcers is that they provide little specific information about a person's task performance. Besides generally indicating the direction of the performance outcome (e.g., "I must have performed well if I received the reward, or vice versa") financial reinforcers neither (1) provide substantive insights about the magnitude of the congruence or discrepancy between the level of the

performance outcome and the desired standard nor (2) supply any specific task-related information to guide subsequent performance efforts (cf. Andrasik, 1979, 1989; O'Hara et al., 1985; Rapp et al., 1983).

Considering the mechanisms through which they operate, the application effectiveness of financial reinforcers is largely enhanced if the following processes are recognized (cf. Bandura, 1986). First, the more closely the incentives are tied to task performance based on individual merit, the greater the performance improvement (Lawler, 1971, 1987). Second, the merit-based individual performance must be measured objectively, since subjective performance evaluations can produce perceptions of inequitable rewards (Hammer, 1979). Finally, if a group-incentive system is used, financial incentives that reward individual merit-based performance are more effective than equally allotted rewards (Farr, 1976).

Nonfinancial Reinforcement

Nonfinancial reinforcers cost organizations little, if anything, to administer. Most of the behavioral interventions in this category can generally be classified as objective or performance feedback (Kopelman, 1986; Luthans & Kreitner, 1985); however, feedback information can be conveyed in a variety of different forms and ways (Ammons, 1956; Kluger & DeNisi, 1996; Komaki et al., 1996). In contrast to financial reinforcers, whose value is based on the tangible payoffs their contents offer, feedback interventions derive their reinforcing power from the information they provide about an employee's performance (Annett, 1969; Bandura, 1986; Kluger & DeNisi, 1996; Komaki, Heinzmann, & Lawson, 1980). Regardless of the source (e.g., supervisor, peers, task) or form (e.g., written, verbal) of feedback information, the overriding guideline for application of feedback interventions under the O.B. Mod. approach is that feedback be (1) conveyed in a positive manner, (2) immediate, (3) graphic, and (4) specific (Luthans, 1995).

There is widely held agreement across the conceptual orientations (Bandura, 1986; Carver & Scheier, 1981; Locke & Latham, 1990) that feedback regulates human action by initiating the evaluation of and stimulating the reaction to a feedback-standard discrepancy (see Kluger & DeNisi [1996] for an extensive discussion and analysis of this topic). Although all of these theories agree on how people evaluate this discrepancy, they differ in their explanations of people's reaction to it. For example, according to control theory, when people perceive a negative discrepancy (after comparing a goal with feedback), they tend to reduce the gap either by changing their behaviors or the standard, or by "leaving the scene" cognitively or physically (Carver & Scheier, 1981). However, according to goal-setting theory, the explanation of people's reaction to the discrepancy is that they are motivated to accomplish the goal, typically by increasing their effort (Locke & Latham, 1990).

According to social cognitive theory (Bandura, 1986), much of human behavior is initiated and regulated by internal self-set standards and self-evaluative reactions to exerted behaviors. After personal standards have

been set, incongruity between behavior and the standard against which it is measured activates self-evaluative reactions that in turn influence subsequent action (Bandura, 1986, 1997). This conceptual approach contrasts with negative feedback control models (e.g., Carver & Scheier, 1981; Kanfer, 1977) and the goal-setting approach (Locke & Latham, 1990), according to which the absence of a discrepancy between standards and the results of behavioral action stops the motivational process, since effort tends to be reduced or, at best, maintained. According to Bandura (1986), even if there is no incongruity between self-standards and present performance, people will tend to set higher standards for themselves and "activate" future behaviors to satisfy new standards (cf. Kluger & DeNisi, 1996).

Social Reinforcement

Social reinforcement includes the use of verbal consequences, typically expressed by individuals, such as attention, recognition, commendations, compliments, and praise (e.g., Haynes et al., 1982). Social reinforcers derive their power from the following correlation of events. As Bandura (1986) noted, valuable material rewards often occur in conjunction with or following the approval of others, and undesirable experiences tend to follow social disapproval. Social reactions, therefore, become predictors of future reinforcement, which in turn strengthens behaviors that result in social approval and weakens behaviors that lead to social disapproval. Thus, by reversing the correlates, the reinforcement value of social consequences is derived from their power to predict subsequent behaviors, rather than from the social reactions themselves (Bandura, 1986).

According to Bandura (1986), several factors contribute to the effectiveness of social reinforcement. First, the approval or disapproval of those who have the authority and resources to administer rewarding or punishing consequences produces stronger effects than the approval or disapproval of those who have no power to subsequently provide any tangible rewards. Second, indiscriminate approval that does not eventually result in material benefits becomes an empty reward, disapproval that is never followed by aversive consequences becomes an empty threat, and both lack the potential to control human behavior. Third, social support that predicts several outcomes has a greater reinforcing potency than support that relates to only a single effect. Finally, because of both its intermittency and diverse correlates, social reinforcement maintains its effectiveness even with minimal tangible support (Mowrer, 1960).

The above theoretical discussion leads to several hypotheses, which we outline according to the progression of Hedges and Olkin's (1985) meta-analytic procedures:

> *Hypothesis 2. Each type of reinforcement intervention will produce significant average effects on task performance in both manufacturing and service organizations.*

Next, in view of the test for between-group homogeneity of effect sizes, we hypothesize that:

Hypothesis 3. Given their different reinforcing potentials, different reinforcement interventions will produce different average effect sizes in both manufacturing and service organizations.

Lastly, with regard to the test for the within-class homogeneity of effect sizes, we hypothesize that:

Hypothesis 4. On the basis of their within-class unique sources of reinforcing potential, each type of reinforcement intervention will produce significant within-class homogeneity of average effects in both manufacturing and service organizations.

META-ANALYTIC MODERATOR ANALYSIS

The Coding of Studies

Each study that met the selection criteria was coded for two moderators on the basis of the conceptual criteria outlined above. The two moderators and their specific categories were: (1) *type of organization* (manufacturing and service) and (2) *type of intervention* (financial intervention, nonfinancial intervention, social reward, and combinations of these three). We included the combinations of two or more types of reinforcement in the analysis for the sake of completeness since several studies simultaneously used different behavioral interventions. Data were coded independently by one of the authors and another trained rater. The values of the interrater agreement statistic (rho) were .96 and .98, respectively, for the moderator groups, and the mean agreement between raters when coding was aggregated across the moderator groups was a rho of .97. The "effective" reliability (R) was .99, indicating the probability that a similar group of two other raters would reach the same conclusions regarding the variables coded (Rosenthal, 1991).

Analytical Procedures

According to Hedges and Olkin's (1985) meta-analytic method, three sets of statistical tests were necessary to determine whether the moderator or moderators adequately explained the nature of the moderation. First, we tested for the homogeneity of effect sizes within the two categories (manufacturing vs. service) of the first moderator group (type of organization) to determine whether this grouping variable adequately explained the study-by-treatment interaction found in the primary meta-analysis. For this test, we used the H_w homogeneity statistic (Hedges, 1982a, 1986), which represents an overall test of the homogeneity of effect sizes *within* the partitioned groups across k studies. Second, we tested for the homogeneity of effect sizes between two categories of the first moderator to examine whether their respective average effect sizes significantly differed *between* each other, using the H_b homogeneity statistic (Hedges, 1982b, 1986). We continued the process of subdividing and testing for within- and between-group fit according

to the second moderator group (type of intervention) until within-group homogeneity with respect to effect magnitude was achieved. Finally, since we found that the effect sizes for final partitions were homogeneous within classes but heterogeneous between classes, we compared the effect sizes for different classes within each group by means of linear combinations using orthogonal polynomials (see Hedges and Olkin [1985] for a detailed discussion of these procedures).

Results of the Moderator Meta-Analysis

Type of organization. Using the type of organization as the first moderator, we split the original set of studies into two groups reflecting manufacturing and service organizations. Weighted average effect sizes for both manufacturing ($d._1 = .96$) and service organizations ($d._2 = .37$) were significant ($p < .05$), indicating the presence of a significant main effect for the O.B. Mod. approach in each group. However, the average effect sizes varied significantly between the manufacturing and service groups ($H_b = 90.54$, $p < .05$), indicating that type of organization was a categorical variable significantly related to the magnitude of effect sizes. These findings supported Hypothesis 1. Further analysis indicated that individual effect sizes were also heterogeneous within each group (see Table 1), signaling that a significant treatment-by-study interaction was present in each group. To account for this interaction, we proceeded with second-level partitioning according to the second moderator that had been conceptually derived a priori, the type of reinforcement intervention.

Type of reinforcement intervention. Each of the initial two groups (manufacturing and service) were further partitioned into several classes according to the type of reinforcement intervention used in the studies. This moderator included seven categories: (1) financial interventions, such as money or valued prizes, (2) nonfinancial interventions, such as performance feedback, (3) social rewards, such as recognition and attention, (4) intervention package 1, the combination of 1 and 2, (5) intervention package 2, the combination of 1 and 3, (6) intervention package 3, the combination of 2 and 3, and (7) intervention package 4, the combination of 1, 2, and 3. Because the number of categories was relatively large, social rewards by themselves and intervention packages 1 and 2 were not represented in the manufacturing

TABLE 1
Summary Statistics for Manufacturing and Service Organizations

Type of Organization	$d.$	$v.$	95% Confidence Limits		χ^{2a}	$H_{wj}{}^b$
			Lower	Upper		
Manufacturing	.96	.003	0.858	1.072	312.56*	161.91*
Service	.37	.001	0.314	0.431	155.59*	364.31*

[a] $\chi^2 = d.^2/v.$ for each group.
[b] Within-moderator-group homogeneity statistic.
* $p < .05$

organizations, and intervention package 2 was not covered in the service group.

For manufacturing organizations, the average effect sizes ($d._{1j}$) were significant ($p < .05$) and homogeneous for these types of intervention: financial ($d._{11} = 1.36$), nonfinancial ($d._{12} = 1.48$), intervention package 3 ($d._{16} = 1.49$), and intervention package 4 ($d._{17} = 1.82$). Homogeneity was achieved both across the classes ($H_{w1} = 15.94$, $p > .05$) and within each class (see Table 2). However, the average effect sizes for each type of intervention for manufacturing organizations were heterogeneous between classes ($H_b = 600.82$, $p < .05$), indicating a significant difference in their effect magnitudes. These findings supported Hypotheses 2, 3, and 4, pertaining to types of interventions in manufacturing organizations.

For service organizations, the average effect sizes ($d._{2j}$) were also all significant ($p < .05$) and homogeneous for each type of intervention: financial ($d._{21} = 0.42$), nonfinancial ($d._{22} = 0.19$), social rewards ($d._{23} = 0.44$), intervention package 1 ($d._{24} = 0.89$), intervention package 3 ($d._{26} = 0.53$), and intervention package 4 ($d._{27} = 0.27$). As in the case of the manufacturing organizations, for service organizations within-group homogeneity was also achieved both across the classes ($H_{w2} = 52.05$, $p > .05$) and within each class (see Table 3). Significant between-class heterogeneity of average effect sizes ($H_b = 564.70$, $p < .05$) indicated that in service organizations, as in the manufacturing ones, different types of interventions produced different effects. These findings supported Hypotheses 2, 3, and 4, pertaining to types of interventions in service organizations.

Type of organization and type of intervention. Since we calculated upper and lower confidence limits for every average unbiased effect size, corresponding to the specific combination of type of organization and type of intervention, the data lend themselves to a useful graphical presentation using a clustered side-by-side schematic plot that can further clarify the

TABLE 2
Summary Statistics for Type of Intervention for Manufacturing Organizations

Type of Intervention[a]	*d.*	*v.*	95% Confidence Limits		χ^2[b]	H_{wj}[c]	*k*	*n*
			Lower	Upper				
1	1.36	.009	1.173	1.553	197.65*	2.94	3	263
2	1.48	.058	1.011	1.955	37.87*	4.34	3	45
6	1.49	.023	1.202	1.793	98.85*	8.52	4	115
7	1.82	.028	1.490	2.150	117.62*	0.14	2	100

[a] Moderator codes for type of intervention: financial intervention = 1, nonfinancial intervention = 2, social rewards = 3, intervention package 1 (combination of 1 and 2) = 4, intervention package 2 (1 and 3) = 5, intervention package 3 (2 and 3) = 6, intervention package 4 (1, 2, and 3) = 7.

[b] $\chi^2 = d.^2/v.$ for each class.

[c] Within-class homogeneity statistic.

* $p < .05$

TABLE 3
Summary Statistics for Type of Intervention for Service Organizations

Type of Intervention[a]	*d.*	*v.*	95% Confidence Limits		χ^{2b}	H_{wi}[c]	*k*	*n*
			Lower	Upper				
1	.42	.009	0.234	0.613	19.19*	1.93	6	124
2	.19	.002	0.101	0.277	17.70*	44.35	37	1,044
3	.44	.046	0.030	0.866	4.40*	0.13	6	96
4	.89	.185	0.050	1.736	4.31*	0.87	4	24
6	.53	.005	0.398	0.662	61.91*	4.69	12	350
7	.27	.007	0.114	0.433	11.27*	0.09	2	425

[a] Moderator codes for type of intervention: financial intervention = 1, nonfinancial intervention = 2, social rewards = 3, intervention package 1 (combination of 1 and 2) = 4, intervention package 2 (1 and 3) = 5, intervention package 3 (2 and 3) = 6, intervention package 4 (1, 2, and 3) = 7.

[b] $\chi^2 = d.^2/v.$ for each class.

[c] Within-class homogeneity statistic.

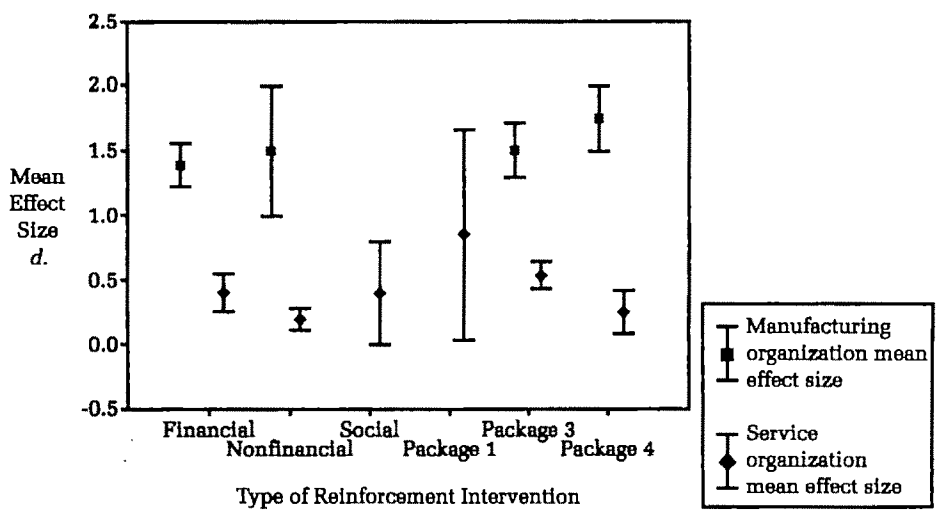
* $p < .05$

relationships analyzed (e.g., Light et al., 1994). Figure 2 presents a schematic plot of average unbiased effect sizes for both the manufacturing ($d_{.1j}$) and service organizations ($d_{.2j}$), categorized by each type of intervention.

Orthogonal Comparisons among Classes

Since the average effect sizes for each initial moderator group produced varying between-class magnitudes, we used orthogonal polynomials

FIGURE 2
Schematic Plot of Average Effect Sizes and Corresponding Confidence Intervals by Type of Organization and Type of Intervention



(Hedges & Olkin, 1985) to determine the pairwise differences for each linear combination for different classes. For manufacturing organizations, we compared effect sizes among different classes by means of six linear combinations. Significant differences between the average effect sizes were detected for comparison III, contrasting financial interventions and intervention package 4, which represents the combination (simultaneous use) of financial interventions, nonfinancial interventions, and social rewards ($\gamma_{III,\ 17} = .46$, $v_{\gamma III,\ 17} = .029$, 95% confidence interval [CI] = .125 to .795, $p < .05$). Using the same procedure for service organizations, we contrasted the average effect sizes among classes within this moderator group by means of 15 linear combinations. Results revealed significant differences for comparison I, which contrasted financial interventions and nonfinancial interventions ($\gamma_{I,\ 12} = -.23$, $v_{\gamma I,\ 12} = .011$, 95% CI = −.439 to −.021, $p < .05$); comparison VIII, contrasting nonfinancial interventions and intervention package 3, simultaneous use of nonfinancial interventions and social rewards ($\gamma_{VIII,\ 27} = .34$, $v_{\gamma VIII,\ 27} = .007$, 95% CI = .181 to .499, $p < .05$); and comparison XV, comparing intervention package 3, nonfinancial interventions and social rewards, and intervention package 4, simultaneous use of financial and nonfinancial interventions and social rewards ($\gamma_{XV,\ 67} = -.26$, $v_{\gamma XV,\ 67} = .007$, 95% CI = −.467 to −.053, $p < .05$).

DISCUSSION

Primary Meta-Analysis

The main purpose of this study was to provide a meta-analytic review of the O.B. Mod. approach to human resource management in organizational settings. By synthesizing the results of the empirical studies conducted over the past 20 years examining the impact of O.B. Mod. on task performance, we intended to answer two major questions: (1) What was the overall effect of O.B. Mod. on task performance? and (2) Were there any study characteristics that systematically moderated the effect magnitudes of O.B. Mod. interventions? With regard to overall effectiveness, the results from our primary meta-analysis indicated a significant main effect (adjusted for overestimation bias, outliers, and extreme values) for the O.B. Mod. approach of .51. Corresponding to half of one standard deviation from the mean, this effect magnitude indicates that the average person in the control group will rise to the 67th percentile (17 percent improvement in performance) after an O.B. Mod. intervention. The derivation of this particular effect size represents the first time that an indicator of the overall effectiveness of a behavioral approach to management has been quantitatively analyzed and reported.

Moderator Meta-Analysis: Toward a Contingency Approach to Behavioral Management

Findings from the primary meta-analysis also revealed that different study characteristics significantly moderated the relationship between the

application of O.B. Mod. and task performance. In evaluating the explanatory power of selected moderators, we found that the magnitude of the relationship between O.B. Mod. interventions and task performance significantly differed depending on the type of organization. Although in both manufacturing and service organizations, various O.B. Mod. interventions produced significant average effects, the average effect for manufacturing organizations was considerably stronger than that for service organizations. This finding indicates that the type of organization should be considered as an important contingency variable when behavioral management is applied. Overall, these results suggest the importance of initiating the development of a contingency approach to behavioral management. Thus, our findings suggest that the first step in this direction would be to recognize that, although behavioral management can produce significant effects in both manufacturing and service organizations, the larger impact tends to be in manufacturing organizations.

Reinforcement interventions in manufacturing organizations. The moderator analysis also revealed the presence of a significant treatment-by-study interaction within both manufacturing and service organizations. Further partitioning of each group according to the second moderator—type of reinforcement intervention—indicated that for manufacturing organizations all four types of reinforcement interventions analyzed produced significant results. However, the magnitudes of the effects revealed different patterns of relationships between the types of O.B. Mod. interventions and task performance. For example, the simultaneous application of financial interventions, nonfinancial interventions, and social rewards (intervention package 4) produced the strongest effect. However, the effect magnitude of this combination intervention was not statistically different from that produced by nonfinancial interventions alone. Furthermore, the effect size for financial interventions alone was also not found to be significantly different from the one for nonfinancial interventions. Finally, microanalysis of comparison III provided additional evidence indicating nonfinancial contingencies as a source of significant increases in task performance.[3]

Reinforcement interventions in service organizations. As in manufacturing organizations, every type of reinforcement intervention analyzed for service organizations produced significant effects, which were also found to be significantly different among the different types of interventions. However, results for the service organizations revealed an interesting relationship between financial and nonfinancial interventions that appeared to be almost the opposite of the relationship of those two interventions in the manufacturing organizations. For instance, in the service organizations financial rewards produced a significantly stronger average effect than nonfinancial interventions. Moreover, nonfinancial interventions such as performance

[3] Comparison III refers to contrasting nonfinancial interventions and intervention package 3, which represents the simultaneous use of nonfinancial interventions and social rewards.

feedback produced the weakest (but still significant) results in the service organizations. A possible explanation for this finding may be that performance feedback in manufacturing organizations tends to be more specific, accurate, and immediate than it is in service organizations, where it is relatively ambiguous, typically more poorly defined, and subjective. However, when social rewards are used in combination with nonfinancial interventions such as performance feedback (intervention package 3), effects on task performance significantly improve (see comparison VIII) even beyond (although not statistically so) the effect produced by financial rewards alone.

Regarding other types of reinforcement interventions in service organizations, although the effects of financial interventions were larger than those of nonfinancial interventions, interestingly enough, they were not statistically different from those produced by social rewards. Another relationship emerged in comparison XV, in which, when compared to intervention package 4, intervention package 3 produced significantly stronger effects on task performance. Uniquely enough, the only difference between these two intervention packages was the addition of financial rewards in intervention package 4. Thus, it appears that when financial rewards are used in combination with nonfinancial contingencies such as performance feedback and social rewards, the monetary rewards may actually diminish the effect of the whole intervention.

Limitations and Future Research

Several limitations of the current research deserve further consideration. First, although not generally recognized by reinforcement and behavioral theorists, it is quite plausible that, in addition to the examined grouping variables, the relationship between O.B. Mod. applications and task performance may also be moderated by human judgmental processes (Bandura, 1986). Since we could not have tested this assumption in this meta-analysis (because no study we examined accounted for such a possibility), we address this potential limitation at the conceptual level. As Bandura (1986, 1997) simply pointed out, when "people have incomplete or erroneous information about alternatives and their probable consequences, they process information through cognitive biases, and what they value might be rather odd" (1986: 231). Also, besides basing their actions on the effects of immediate reinforcement, people may also act on their judgments of how well they can perform the behaviors necessary to receive the consequences (Bandura, 1997). In essence, expectations of personal inefficacy appear likely to hinder an individual's coping behavior directed toward the most cherished outcomes if the person doubts that he or she can do what is necessary to succeed, whereas a sense of high personal efficacy may help sustain efforts even in light of uncertain outcomes (cf. Bandura, 1997; Maddux, 1995). Thus, future research should examine the potential for the moderating impact of human judgmental processes (e.g., self-efficacy) on the relationship between O.B. Mod. and task performance.

A second limitation is the somewhat narrow focus of the O.B. Mod.

approach, which emphasizes only the contingent consequences of observable and measurable performance-related behaviors. Although we believe that our findings can serve as a *point of departure* in an empirical effort to develop a contingency approach to behavioral management, in building a comprehensive contingency theory and pragmatic guidelines for practice, future research should focus on expanding the scope of our analysis. Examining a broader range of effect sizes and variables—such as the antecedents used for behavioral control interventions (cf. Manz & Sims, 1980, 1981), random reinforcement, self-generated rewards, and possible interaction effects between these variables and the reinforcing contingent consequences—may provide a more thorough understanding of the complexities of human behavior in organizational settings.

Third, on a more methodological level, it is possible that an unknown moderator (or moderators) might be related to sample size or to the content of a sample, thus causing nonrandom sample selection error (Russell & Gilliland, 1995). In this scenario, some screening or moderating process, rather than the moderator itself, operates to select certain types of subjects in a particular sample. Thus, besides the always-present possibility that sample differences might be due to the "true" impact of a certain moderator, differences in effect sizes between different samples might also be due to differences in the way the samples were composed (a moderating process). Since in meta-analyses moderator effects are detected through residual variances (e.g., Hedges and Olkin's [1985] χ^2–homogeneity-of-effect-sizes test, or Hunter and Schmidt's [1995] 75 percent rule), a moderator analysis can indicate the presence of a moderator effect, but it cannot determine any conceptual processes behind the effect (Russell & Gilliland, 1995). Only primary research with random assignment of subjects to experimental and control groups can, so far, adequately resolve this problem (Cook & Campbell, 1977). Addressing the complexities of nonrandom sampling error is an area in need of further methodological and conceptual development within the field of research synthesis.

Practical Implications

The results of this meta-analysis have several practical implications for managers who are interested in enhancing the performance of their employees in an efficient, inexpensive, and relatively simple manner. Two dimensions of our findings seem of particular importance: (1) understanding that, overall, the O.B. Mod. approach was found to have a significant positive effect on task performance and (2) understanding the contingent nature of the O.B. Mod. interventions. In line with the contingent aspect of the O.B. Mod. approach, we offer several specific recommendations for future practical applications.

First, O.B. Mod. produces stronger effects in manufacturing than in service organizations. In manufacturing organizations, intervention packages (simultaneous use of several types of reinforcement) and financial reinforcement both have significant effects, but they do not produce effects

that are significantly different from those of nonfinancial interventions. Thus, the use of nonfinancial interventions is recommended because it does not appear to be beneficial for the managements of these organizations to spend extra resources for financially based rewards (money or valued prizes) or to spend extra time and effort to apply intervention package 4, when the application of nonfinancial interventions alone basically produces the same results.

Second, in service organizations, financial reinforcers seem to result in significantly stronger effects than nonfinancial interventions. However, if social reinforcement is applied in combination with nonfinancial interventions (e.g., performance feedback), the effect magnitude increases slightly beyond that of the monetary rewards used alone. The practical contingency guideline in this case would be that in service organizations, as well as in manufacturing ones, there appears to be a favorable probability that the same positive effects (even slightly higher effects) on task performance can be obtained by applying nonfinancial—in this case, social—rewards, as opposed to costly financial interventions.

Overall, the major implication of these contingency guidelines is that, at least from a cost-benefit perspective, practitioners should more closely examine the natures of different behavioral interventions in both manufacturing and service organizations. We believe that the suggestions provided can serve as useful practical guidelines to help managers resolve the increasingly complex challenge organizations face now and in the future—increasing employee performance effectiveness without increasing costs.

REFERENCES[a]

* Abernathy, W. B. 1978. ***Case studies in organizational behavior modification.*** Doctoral dissertation, Ohio State University, Columbus.

Adam, E., & Scott, W. E. 1971. The application of behavioral conditioning procedures to the problems of quality control. ***Academy of Management Journal,*** 14: 175–193.

Ammons, R. B. 1956. Effects of knowledge of performance: A survey and tentative theoretical formulation. ***Journal of General Psychology,*** 54: 279–299.

Andrasik, F. 1979. Organizational behavior modification in business settings: A methodological and content review. ***Journal of Organizational Behavior Management,*** 2(2): 85–102.

Andrasik, F. 1989. Organizational behavior modification in business settings: A methodological and content review. ***Journal of Organizational Behavior Management,*** 10(1): 59–77.

Andrasik, F., Heimberg, J. S., & McNamara, J. R. 1981. Behavior modification of work and work-related problems. In M. Hersen & R. M. Eisler (Eds.), ***Progress in behavior modification:*** 118–161. New York: Academic Press.

Andrasik, F., McNamara, J. R., & Edlund, S. R. 1981. Future directions for OBM. ***Journal of Organizational Behavior Management,*** 3(2): 1–3.

Annett, J. 1969. ***Feedback and human behavior.*** Harmondsworth, England: Penguin Books.

Bandura, A. 1969. ***Principles of behavior modification.*** New York: Holt, Rinehart & Winston.

[a] Studies preceded by an asterisk were included in the meta-analysis.

Bandura, A. 1977. Self-efficacy: Toward a unifying theory of behavioral change. ***Psychological Review,*** 84: 191–215.

Bandura, A. 1986. ***Social foundations of thought and action.*** Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. 1997. ***Self-efficacy: The exercise of control.*** New York: Freeman.

Bobb, H. W., & Kopp, D. G. 1978. Applications of behavior modification in business organizations: A review and critique. ***Academy of Management Review,*** 3: 281–292.

* Bond, K. M., & Luthans, F. 1976. ***The usefulness of the reversal design method in open organizations with gainfully-employed participants: Empirical results and interpretations.*** Unpublished manuscript, University of Nebraska, Lincoln.

Bowen, D. E., Chase, R. B., & Cummings, T. G. 1990. ***Service management effectiveness.*** San Francisco: Jossey-Bass.

Brethower, D. M. 1972. ***Behavioral analyses in business and industry: A total performance system.*** Kalamazoo, MI: Behaviordelia.

Carver, C. S., & Scheier, M. F. 1981. ***Attention and self-regulation: A control theory of human behavior.*** New York: Springer-Verlag.

Collier, D. A. 1990. Measuring and managing service quality. In D. E. Bowen, R. B. Chase, & T. G. Cummings (Eds.), ***Service management effectiveness:*** 234–265. San Francisco: Jossey-Bass.

Connellan, T. K. 1978. ***How to improve human performance: Behaviorism in business and industry.*** New York: Harper & Row.

Cook, T. D., & Campbell, D. T. 1977. ***Quasi-experimentation.*** Boston: Houghton Mifflin.

* Davis, T. R. V., & Luthans, F. 1984. Defining and researching leadership as a behavioral construct: An idiographic approach. ***Journal of Applied Behavioral Science,*** 20: 237–251.

* Eastman, K. K. 1986. ***An analysis of an organizational behavior modification program in an FDIC office.*** Unpublished manuscript, University of Nebraska—Lincoln.

Farr, J. L. 1976. Incentive schedules, productivity, and satisfaction in work groups: A laboratory study. ***Organizational Behavior and Human Performance,*** 17: 159–170.

Ferster, C. B., & Perrott, M. C. 1968. ***Behavior principles.*** New York: New Century.

Ferster, C. B., & Skinner, B. F. 1957. ***Schedules of reinforcement.*** New York: Appleton-Century-Crofts.

Frederiksen, L. W. (Ed.). 1982a. ***Handbook of organizational behavior management.*** New York: Wiley.

Frederiksen, L. W. 1982b. Organizational behavior management: An overview. In L. W. Frederiksen (Ed.), ***Handbook of organizational behavior management:*** 3–20. New York: Wiley.

Frederiksen, L. W., & Johnson, R. P. 1981. Organizational behavior management. In M. Hersen, R. Eisler, & P. Miller (Eds.), ***Progress in behavior modification:*** 67–118. New York: Academic Press.

Frederiksen, L. W., & Lovett, S. B. 1980. Inside organizational behavior management: Perspectives on an emerging field. ***Journal of Organizational Behavior,*** 2: 193–203.

Gilbert, T. F. 1978. ***Human competence: Engineering worthy performance.*** New York: McGraw-Hill.

Glass, G. V. 1976. ***Presidential address.*** Presentation at the annual meeting of the American Educational Research Association, San Francisco.

Hammer, W. C. 1979. How to ruin motivation with pay. In R. M. Steers & L. W. Porter (Eds.), ***Motivation and work behavior:*** 538–551. New York: McGraw-Hill.

* Haynes, R. S., Pine, R. S., & Fitch, H. G. 1982. Reducing accident rates with organizational behavior modification. ***Academy of Management Journal,*** 25: 407–416.

Hedges, L. V. 1981. Distribution theory for Glass's estimator of effect size and related estimators. ***Journal of Educational Statistics,*** 6: 107–128.

Hedges, L. V. 1982a. Fitting categorical models to effect sizes from a series of experiments. ***Journal of Educational Statistics,*** 7: 119–137.

Hedges, L. V. 1982b. Estimating effect sizes from a series of independent experiments. ***Psychological Bulletin,*** 92: 490–499.

Hedges, L. V. 1986. Issues in meta-analysis. In E. Z. Rothkopf (Ed.), ***Review of research in education,*** vol. 13: 353–398. Washington, DC: American Educational Research Association.

Hedges, L. V., & Olkin, I. 1985. ***Statistical methods for meta-analysis.*** San Diego: Academic Press.

Heskett, J. L. 1986. ***Managing in the service economy.*** Boston: Harvard Business School Press.

Hunter, J. E., & Schmidt, F. L. 1995. ***Methods of meta-analysis.*** Beverly Hills, CA: Sage.

Kanfer, F. H. 1977. The many faces of self-control, or behavior modification changes its focus. In R. B. Stuart (Ed.), ***Behavioral self-management:*** 1–48. New York: Brunner/Mazel.

Kazdin, A. E. 1975. ***Behavior modification in applied settings.*** Homewood, IL: Dorsey.

Kempen, R. W. 1982. Absenteeism and tardiness. In L. W. Frederiksen (Ed.), ***Handbook of organizational behavior management:*** 365–392. New York: Wiley.

Kluger, A. N., & DeNisi, A. 1996. The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. ***Psychological Bulletin,*** 119: 254–284.

Komaki, J. 1986. Toward effective supervision: An operant analysis and comparison of managers at work. ***Journal of Applied Psychology,*** 71: 270–279.

Komaki, J., Blood, M. R., & Holder, D. 1980. Fostering friendliness in a fast food franchise. ***Journal of Organizational Behavior Management,*** 2: 151–164.

Komaki, J., Collins, R. L., & Penn, P. 1982. The role of performance antecedents and consequences in work motivation. ***Journal of Applied Psychology,*** 67: 334–340.

Komaki, J., Coombs, T., & Schepman, S. 1996. Motivational implications of reinforcement theory. In R. M. Steers, L. W. Porter, & G. A. Bigley (Eds.), ***Motivation and leadership at work:*** 34–52. New York: McGraw-Hill.

Komaki, J., Heinzmann, A. T., & Lawson, L. 1982. Effects of training and feedback: Component analysis of a behavioral safety program. ***Journal of Applied Psychology,*** 65: 261–270.

Komaki, J., Waddell, W. M., & Pearce, M. G. 1977. The applied behavior analysis approach to individual employees. ***Organizational Behavior and Human Performance,*** 19: 337–352.

Kopelman, R. E. 1986. Objective feedback. In E. A. Locke (Ed.), ***Generalizing from laboratory to field settings:*** 119–145. Lexington, MA: Lexington Books.

Krapfl, J. E., & Gasparotto, G. 1982. Behavioral systems analysis. In L. W. Frederiksen (Ed.), ***Handbook of organizational behavior management:*** 21–38. New York: Wiley.

Lawler, E. E., III. 1971. ***Pay and organizational effectiveness: A psychological review.*** New York: McGraw-Hill.

Lawler, E. E., III. 1987. The design of effective reward systems. In J. W. Lorsch (Ed.), ***Handbook of organizational behavior:*** 255–271. Englewood Cliffs, NJ: Prentice-Hall.

Lent, R. W., Brown, S. D., & Larkin, K. C. 1987. Comparison of three theoretically derived variables in predicting career and academic behavior: Self-efficacy, interest congruence, and consequence thinking. ***Journal of Counseling Psychology,*** 34: 293–298.

Light, R. J., Singer, J. D., & Willett, 1994. The visual presentation and interpretation of meta-analysis. In H. Cooper & L. V. Hedges (Eds.), ***Handbook of research synthesis:*** 439–453. New York: Russell Sage Foundation.

Locke, E. A., & Latham, G. P. 1990. ***A theory of goal-setting and task performance.*** Englewood Cliffs, NJ: Prentice-Hall.

Luthans, F. 1973. ***Organizational behavior.*** New York: McGraw-Hill.

Luthans, F. 1988. The exploding service sector: Meeting the challenge through behavioral management. ***Journal of Organizational Change Management,*** 1(1): 18–28.

Luthans, F. 1995. ***Organizational behavior*** (7th ed.). New York: McGraw-Hill.

Luthans, F., & Davis, T. R. V. 1982. An idiographic approach to organizational behavior research: The use of single case experimental designs and direct measures. ***Academy of Management Review,*** 7: 380–391.

Luthans, F., & Davis, T. R. V. 1990. Applying behavioral management techniques in service organizations. In D. E. Bowen, R. B. Chase, & T. G. Cummings (Eds.), ***Service management effectiveness:*** 177–209. San Francisco: Jossey-Bass.

* Luthans, F., Fox, M. L., & Davis, E. 1991. Improving the delivery of quality service: Behavioral management techniques. ***Leadership and Organization Development Journal,*** 12(2): 3–6.

Luthans, F., & Kreitner, R. 1975. ***Organizational behavior modification.*** Glenview, IL: Scott, Foresman.

Luthans, F., & Kreitner, R. 1985. ***Organizational behavior modification and beyond.*** Glenview, IL: Scott, Foresman.

* Luthans, F., & Maris, T. L. 1979. Evaluating personnel programs through the reversal technique. ***Personnel Journal,*** 58: 692–697.

Luthans, F., & Martinko, M. 1987. Behavioral approaches to organizations. In C. L. Cooper & I. T. Robertson (Eds.), ***International review of industrial and organizational psychology:*** 35–60. New York: Wiley.

* Luthans, F., Paul, R., & Baker, D. 1981. An experimental analysis of the impact of contingent reinforcement on salespersons' performance behavior. ***Journal of Applied Psychology,*** 66: 214–323.

* Luthans, F., Paul, R., & Taylor, L. 1985. The impact of contingent reinforcement on retail salespersons' performance behaviors: A replicated field experiment. ***Journal of Organizational Behavior Management,*** 7(1 & 2): 25–35.

* Luthans, F., & Schweizer, J. 1979. How behavior modification techniques can improve total organizational performance. ***Management Review,*** September: 43–50.

Luthans, F., & White, D. D. 1971. Behavior modification: Application to manpower management. ***Personnel Administration,*** 34(4): 41–47.

Maddux, J. E. 1995. ***Self-efficacy, adaptation, and adjustment: Theory, research, and application.*** New York: Plenum.

Manz, C. C., & Sims, H. P. 1980. Self-management as a substitute for leadership: A social learning perspective. ***Academy of Management Review,*** 5:361–367.

Manz, C. C., & Sims, H. P. 1981. Vicarious learning: The influence of modeling on organizational behavior. ***Academy of Management Review,*** 6: 105–113.

* Martinko, M. J. 1986. An O.B. mod. analysis of consumer behavior. ***Journal of Organizational Behavior Management,*** 8(1): 19–43.

* Martinko, M. J., White, J. D., & Hassell, B. 1989. An operant analysis of prompting in a sales environment. ***Journal of Organizational Behavior Management,*** 10(1): 93–107.

Mawhinney, T. C. 1979. Intrinsic × extrinsic work motivation: Perspectives from behaviorism. ***Organizational Behavior and Human Performance,*** 24: 411–440.

Mawhinney, T. C. 1992. Evolution of organizational cultures as selection by consequences: The Gaia hypothesis, metacontingencies, and organizational ecology. ***Journal of Organizational Behavior Management,*** 12(2): 1–26.

Mawhinney, T. C., & Ford, J. D. 1977. The path-goal theory of leader effectiveness. An operant interpretation. ***Academy of Management Review,*** 2: 398–411.

Mayhew, G. L., Enyart, P., & Cone, J. D. 1979. Approaches to employee management: Policies and preferences. ***Journal of Organizational Behavior Management,*** 2(2): 103–111.

Merwin, G. A., Jr., Thomason, J. A., & Sanford, E. E. 1989. A methodology and content review of organizational behavior management in the private sector: 1978–1986. ***Journal of Organizational Behavior Management,*** 10(1): 39–57.

Miller, L. M. 1978. ***Behavior management: The new science of managing people at work.*** New York: Wiley.

Mirman, R. 1982. Performance management in sales organizations. In L. W. Frederiksen (Ed.), ***Handbook of organizational behavior management:*** 427–475. New York: Wiley.

Mowrer, O. H. 1960. ***Learning theory and behavior.*** New York: Wiley.

Nord, W. R. 1969. Beyond the teaching machine: The neglected area of operant conditioning in the theory and practice of management. ***Organizational Behavior and Human Performance,*** 4: 375–401.

* Nordstrom, R., Hall, R. V., Lorenzi, P., & Delquadri, J. 1988. Organizational behavior modification in the public sector. ***Journal of Organizational Behavior Management,*** 9(2): 91–112.

O'Hara, K., Johnson, C. M., & Beehr, T. A. 1985. Organizational behavior management in the private sector: A review of empirical research and recommendations for future investigations. ***Academy of Management Review,*** 10: 848–864.

* Ottemann, R., & Luthans, F. 1975. An experimental analysis of the effectiveness of an organizational modification program in industry. In A. G. Bedeian, A. A. Armenakis, W. H. Holyer, Jr., & H. S. Field (Eds.), ***Proceedings of the 35th Annual Meeting of the Academy of Management:*** 140–142.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. 1985. A conceptual model of service quality and its implications for future research. ***Journal of Marketing,*** 49: 41–50.

Pavlov, I. 1927. ***Conditioned reflexes: An investigation of the physiological activity of the cerebral cortex.*** London: Oxford University Press.

Quinn, J. B., & Gagnon, C. E. 1986. Will service follow manufacturing into decline? ***Harvard Business Review,*** 64(6): 95–105.

Rapp, S. R., Carstensen, L. L., & Prue, D. M. 1983. Organizational behavior management 1978–1982: An annotated bibliography. ***Journal of Organizational Behavior Management,*** 5(2): 5–50.

Riddle, D. I. 1986. ***Service-led growth.*** New York: Praeger.

Rogers, C., & Skinner, B. F. 1956. Some issues concerning the control of human behavior. ***Science,*** 124: 1057–1066.

Rosenthal, R. 1991. ***Meta-analytic procedures for social research.*** Beverly Hills, CA: Sage.

Rosenthal, R. 1994. Parametric measures of effect sizes. In H. Cooper & L. V. Hedges (Eds.), ***Handbook of research synthesis:*** 231–244. New York: Russell Sage Foundation.

Russell, G. J., & Gilliand, S. W. 1995. Why meta-analysis doesn't tell us what the data really mean: Distinguishing between moderator effects and moderator processes. ***Journal of Management,*** 21: 813–831.

Sasser, W. E., Olsen, R. P., & Wyckoff, D. D. 1978. ***Management of service operations.*** Boston: Allyn & Bacon.

Schneider, B., & Bowen, D. E. 1993. The service organization: Human resources management is crucial. ***Organizational Dynamics,*** 21(4): 39–52.

Scott, W. E., Jr., & Podsakoff, P. M. 1985. ***Behavioral principles in the practice of management.*** New York: Wiley.

Skinner, B. F. 1938. ***The behavior of organisms.*** New York: Free Press.

Skinner, B. F. 1953. ***Science and human behavior.*** New York: Free Press.

Skinner, B. F. 1966. Operant behavior. In W. Honig (Ed.), ***Operant behavior: Areas of research and application:*** 12–32. New York: Appleton-Century-Crofts.

Skinner, B. F. 1969. ***Contingencies of reinforcement.*** New York: Appleton-Century-Crofts.

* Snyder, C. A., & Luthans, F. 1982. Using O.B. Mod. to increase hospital productivity. ***Personnel Administrator,*** 27(8): 67–73.

Stokes, T. F., & Baer, D. M. 1977. An implicit technology of generalization. ***Journal of Applied Behavior Analysis,*** 10: 349–367.

Sulzer-Azaroff, B., Pollack, M. J., & Fleming, R. K. 1992. Organizational behavior management within structural and cultural constraints: An example from the human service sector. ***Journal of Organizational Behavior Management,*** 12(2): 117–137.

Thorndike, E. L. 1913. ***Educational psychology: The psychology of learning,*** vol. 2. New York: Columbia University Teachers College.

Tukey, J. W. 1977. ***Exploratory data analysis.*** Reading, MA: Addison-Wesley.

Vroom, V. H. 1964. ***Work motivation.*** New York: Wiley.

* Walderesee, R., & Luthans, F. 1994. The impact of positive and corrective feedback on customer service performance. ***Journal of Organizational Behavior,*** 15: 83–95.

Watson, J. B. 1913. Psychology as the behaviorist views it. ***Psychological Review,*** 20: 158–177.

* Welsh, D. H. B., Luthans, F., & Sommer, S. M. 1993a. Managing Russian factory workers: The impact of U.S.-based behavioral and participative techniques. ***Academy of Management Journal,*** 36: 58–79.

* Welsh, D. H. B., Luthans, F., & Sommer, S. M. 1993b. Organizational behavior modification goes to Russia: Replicating an experimental analysis across cultures and tasks. ***Journal of Organizational Behavior Management,*** 13(2): 15–35.

Wenrich, W. W. 1970. ***A primer of behavior modification.*** New York: Brooks/Cole.

Wikoff, M., Anderson, D. C., & Crowell, C. R. 1982. Behavior management in a factory setting: Increasing work efficiency. ***Journal of Organizational Behavior Management,*** 4(1 & 2): 97–127.

Williams, C. R., & Livingstone, L. 1994. Another look at the relationship between performance and voluntary turnover. ***Academy of Management Journal,*** 37: 269–298.

Williams, R. H., & Zigli, R. M. 1987. Ambiguity impedes quality in the service industries. ***Quality Progress,*** 20(7): 14–17.

* Zohar, D., & Fussfeld, N. 1981. A systems approach to organizational behavior modification: Theoretical considerations and empirical evidence. ***International Review of Applied Psychology,*** 30: 491–505.

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RESEARCH NOTES

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THE IMPORTANCE OF COLLABORATIVE KNOW-HOW: AN EMPIRICAL TEST OF THE LEARNING ORGANIZATION

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In this research, I proposed and tested a model of how firms learn from their strategic alliances. Based on a survey of 151 firms, the results suggest that experience alone is insufficient for the achievement of the greatest benefits from collaboration. Experience must be internalized first, and collaborative know-how must be developed for this experience to contribute to future collaborative benefits.

Many researchers have demonstrated the importance of knowledge to management, but few have focused on how companies can develop this know-how. What has been written is theoretical (Fiol & Lyles, 1985; Huber, 1991; Nonaka & Takeuchi, 1995), and beyond small-sample, in-depth studies of a few organizations, there has been almost no empirical work in this area. Although the theories reflect an intuitive understanding of the effects of learning and knowledge-based resources on performance, there is a clear need for hypothesis development and testing (Fiol, 1994; Miller & Shamsie, 1996). In this research, I responded to this need by using a large cross-sectional sample and one particular type of knowledge, *collaborative know-how,* to determine whether companies can develop specialized knowledge via experience and then use this knowledge to obtain further benefits.

Collaboration between companies that do or could compete has attracted growing attention (Contractor & Lorange, 1988; Dodgson, 1996; Kogut, 1988; Parkhe, 1993). Although such collaboration has always been necessary, the rate at which firms formally collaborate has increased dramatically in recent years (Glaister & Buckley, 1996; Gomes-Casseres, 1996; Gulati, 1995). These collaborations have become important, if not critical, means of supplementing corporate strengths and covering weaknesses (Harrigan, 1988). Yet collaborations often do not achieve their original goals, and many fail. The costs of failure can be tremendous: companies can use the technological capabilities of their former partners against them (Hamel, 1991; Lei & Slocum, 1992; Reich & Mankin, 1986).

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Given these high stakes, it is important to examine whether firms learn from the success and failure of collaborations and apply these lessons to new collaborations. Hill and Hellriegel (1994) argued that the lower-than-average failure rate of joint ventures in the oil industry can be linked to the fact that managers have learned the essentials of collaboration, whereas in other industries, firms appear to need to use more time and resources to learn about their prospective partners and how to collaborate with them. In another context, when General Motors (GM) formed its joint venture with Korea's Daewoo Motors, GM had already entered numerous other strategic alliances with Asian partners, including Fanuc, Hitachi, Isuzu, Nissan and affiliates, Suzuki, and Toyota; these multiple collaborative experiences did not prevent the formation and continuation over several years of an enormously difficult and contentious relationship or the lengthy, heated divorce of GM and Daewoo (Serapio & Cascio, 1996). These examples show that experience with collaborations alone is not enough to guarantee good future collaborative performance.

The central theme of this research note is that a firm's experience must be transformed into know-how before it can improve performance. This research extends existing work by (1) introducing a construct of collaborative know-how that measures the extent to which firms have skill in identifying, negotiating, managing, monitoring, and terminating collaborations, (2) relating this collaborative know-how to the achievement of both tangible and intangible benefits from collaborations, (3) relating this collaborative know-how to past collaborative experience, (4) showing that experience with collaborations, without the development of collaborative know-how, will not contribute to the achievement of benefits, (5) examining the impact of firm size on the process, and (6) looking at a large sample of firms in a single study.

THEORETICAL MODEL AND LITERATURE

Management researchers have recently begun looking at elements within firms to explain their success and failure and, more specifically, how their competitive positions are enhanced through superior knowledge. Some theorists have focused on resources (Barney, 1991; Eisenhardt & Schoonhaven, 1996), capabilities (Kogut & Zander, 1992), or competencies (Helleloid & Simonin, 1994; Reed & DeFillippi, 1990). Others have looked more at how organizations acquire and develop their competencies over time (Fiol & Lyles, 1985; Huber, 1991; Levitt & March, 1988; Van de Ven & Polley, 1992). There is also a growing body of research on how firms can learn from and develop new resources through strategic alliances with other firms (Crossan & Inkpen, 1994; Dodgson, 1996; Kogut, 1988; Lyles, 1988). I integrated these streams of inquiry by developing and empirically testing a model of how organizational experience relates to the formation of specialized know-how that in turn impacts organizational performance.

Figure 1 encapsulates the theoretical model for this study, model 1, which was assessed against competing models (models 2a, 2b, and 3, see

Table 3) following Anderson and Gerbing's (1988) two-stage procedure. No one path, but the simultaneity with which all hypothesized relationships can be modeled, confers integrity and relevance to the model. The basic tenet at the heart of the postulated model and testing sequence—that collaborative know-how is a more important asset than collaborative experience in shaping performance—is consistent with past research on organizational learning as well as with the resource-based view of the firm. In the area of organizational learning, it is supported in particular by Nass's (1994) study of individual administrators' learning and Pennings, Barkema, and Douma's (1994) investigation of the relationship between organizational learning and corporate diversification. Pennings and colleagues concluded not only that project expansions were more likely to succeed (in the present study, performance and benefits were the measure of success) when they are related and similar to those a firm has undertaken before (experience), but that experience with certain expansions should lead to a greater capacity (know-how) to implement future expansions successfully (performance). Although Pennings and colleagues related the success of corporate expansion decisions to organizational know-how and learning, they did not measure these constructs directly, instead stating that learning can be inferred from the longevity or magnitude of expansion activities. Other organizational learning studies have also used inferences from experience or some type of benefit as a proxy for know-how. Yet without assessing know-how itself, researchers cannot confirm that learning has truly occurred; a change in the degree or type of benefits over the course of a number of experiences signifies that performance has changed for any number of reasons, with learning being only one of these. This study differentiates between mere experience and know-how through the derivation of an explicit construct of collaborative know-how.

Resource-based arguments for sustainable competitive advantage and performance have focused on firm-specific assets that are valuable, rare, imperfectly imitable, and imperfectly substitutable (Barney, 1991). Collaborative know-how fits each of the criteria more closely than collaborative experience, in support of the theoretical model; this better fit accounts for know-how's being more critical than experience. With respect to the first criterion, collaborative know-how, or capability, has long been considered a valuable resource. For instance, Miller and Shamsie (1996) argued that knowledge-based resources often take the form of particular skills (know-how), including collaborative ones that help experts work and learn together effectively. Likewise, Prahalad and Hamel (1990) recognized NEC's competency in managing interfirm collaborations as an important determinant in the company's ability to access and internalize new strategic assets from its alliance partners. By contrast, experience has been challenged for often being a poor teacher (Berg, 1993; Levinthal & March, 1993) and therefore not as valuable.

The high rate of alliance failures constitutes strong evidence that collaborative know-how is also rarer than collaborative experience. If a bandwagon effect prevails, firms lacking proper know-how may multiply collabo-

rative experiences and rush into arrangements that are ill-conceived, poorly managed and, therefore, prone to early termination.

Under the third criterion, imperfect imitability, collaborative experience can be traced, mapped, and therefore more easily duplicated than collaborative know-how, which is socially complex (Barney, 1991) and causally ambiguous (Reed & DeFillippi, 1990). Collaborative know-how represents organization-wide culture and expertise that cut across departments, individuals, and time (Nonaka & Takeuchi, 1995), a multifaceted capability that, as a result of its broad scope, is more difficult for competitors to replicate than is experience (cf. Grant, 1996). Furthermore, since they are better able to avoid early mistakes and resolve initial problems before they become insurmountable, firms with greater collaborative know-how are more likely to develop trust and reputation through repeated ties with other firms (Gulati, 1995), a process resulting in enduring relationships that are less imitable (and substitutable for) than those based on mere experience.

Under the fourth criterion, experience can be substituted for more easily than know-how. Competition in the RISC chip industry,[1] for example, has quickly led to a proliferation of alliance constellations centered on IBM, Mips, Hewlett-Packard, and Sun Microsystems that allow these companies to develop, build, sell, and promote their respective chips and systems (cf. Gomes-Casseres, 1996). This example demonstrates that the implementation of the same collaborative strategy can be considered relatively straightforward (i.e., replication of the others' experience); in contrast, replacing these firms' resulting collaborative know-how would be a very formidable challenge because of the idiosyncratic nature of this know-how.

With respect to the resource-based view of the firm on which the previous approach draws, Miller and Shamsie (1996) recognized that empirical studies were too rare and that one of the main reasons for that rarity was the difficulty of operationally defining the notion of resources. This study builds on the resource-based view by defining one resource, collaborative know-how, and measuring it. The following sections describe each of the constructs represented in the model.

Performance: Tangible and Intangible Benefits

The rationales for entering strategic alliances, encompassing a broad spectrum of strategic and tactical motives, have been well documented in the literature (cf. Contractor & Lorange, 1988; Dodgson, 1996; Glaister & Buckley, 1996). Since the benefits sought often do not materialize, the critical questions for a firm entering a new alliance become performance assessment and control (cf. Geringer & Hebert, 1991). Because alliance rationales and performance are multidimensional (cf. Dussauge & Garrette, 1995; Hill & Hillriegel, 1994), some researchers (Crossan & Inkpen, 1994; Hamel, 1991; Pucik, 1988) have argued for the need to explicitly distinguish the transfer of

[1] RISC is reduced instruction-set computing.

knowledge from other strategic and financial benefits. Ohmae, for example, argued that "most of the time, the financials don't capture the real benefits of alliances" (1989: 153). Likewise, as part of their findings, Crossan and Inkpen reported that "managers use performance as a direct proxy for gauging learning occurrence . . . [and] managers in the American parent companies frequently pointed to poor joint-venture financial performance as evidence that learning was either not occurring or could not occur" (1995: 77).

Accordingly, in this study performance was divided into two conceptually distinct constructs, tangible and intangible collaborative benefits. Tangible benefits are strategic and financial: generating additional profits, improving market share, and sustaining competitive advantage, for instance. Intangible benefits are learning or knowledge-based: learning specific skills and competencies (Kogut, 1988; Parkhe, 1991), learning about interfirm cooperation (Lyles, 1988), and learning how to behave cooperatively (Lane & Beamish, 1990); or, in an emerging area of interest to both scholars and practitioners, simply learning how to learn from collaborations (Crossan & Inkpen, 1994; Hamel, 1991). This learning imperative was best summarized by Lei and Slocum when they stated that "companies must learn how to better utilize strategic alliances as vehicles for learning new technologies and skills from their alliance partners while simultaneously protecting themselves from being 'deskilled' and 'hollowed out' " (1992: 81).

Although it is certainly possible for firms to attain both tangible and intangible benefits, difficult operational trade-offs in managing and staffing collaborations emerge, depending upon the benefits sought (Pucik, 1988). Organizations that have targeted and achieved intangible benefits may not yet have realized the tangible benefits that will eventually flow from a collaboration. Conversely, some collaborations may yield clear tangible benefits (e.g., market share growth), but intangible gains (e.g., superior knowledge about the market) may not yet be attained. In both cases, when partners use different time spans to measure the completion of a collaboration's objectives, there are likely to be difficulties in managing and monitoring the collaboration (Ganitsky & Watzke, 1990).

Collaborative Know-How

In many organizations, corporate perceptions and use of international joint ventures have become institutionalized and have resulted in the formulation of both explicit and implicit organizational routines (Tallman & Shenkar, 1994). It is this organizational know-how that determines how effectively new collaborations are entered and managed. Collaborative know-how per se is a complex, multifaceted construct, as the diversity of research themes in the literature suggests; these range from alliance formation (Contractor & Lorange, 1988; Eisenhardt & Schoonhoven, 1996) to performance evaluation (Geringer & Hebert, 1991; Hagedoorn & Schakenraad, 1994). Given this broad spectrum of alliance issues, it is useful to think of collaborative know-how along the following four fundamental phases of a collaboration cycle:

(1) Identifying and selecting potential collaborators (Geringer, 1991). Success in this area rests upon ability to determine which firms will actually deliver the benefits sought, to understand the strategic implications of choosing one firm over another, to accurately assess technological and marketing capabilities, as well as other strengths, and to evaluate the likely responses of different partners to various contingencies, including loss of valuable strategic information, which can result from even preliminary discussions. This initial stage is critical since "the specific partner chosen can influence the overall mix of available skills and resources, the operating policies and procedures, and the short and long term viability" of a collaboration (Geringer, 1991: 55–56).

(2) Negotiating the terms and structure of a collaborative agreement (Lorange & Roos, 1990). Doing this requires the ability to evaluate the important legal, tax, and financial implications of different collaborative forms and structures, as well as to simply understand a collaborator's position and close the deal.

(3) Monitoring and managing an ongoing collaboration (Ganitsky & Watzke, 1990; Hladik, 1985). This process calls for directing, evaluating, and enforcing the actions of others (Minkler, 1993), activities that require a variety of different skills, including staffing, trust building, resolving conflicts, transferring resources, training, and renegotiating agreements. These staffing, management, and control-related issues are important since they can significantly affect the learning that takes place in a collaboration and its ultimate success or failure (Van de Ven & Polley, 1992). Toward this end, Lorange and Roos (1990) suggested that the "competence mix" of the management team running a collaboration should reflect the objectives set for the collaboration. Likewise, in his study of global strategic alliances, Parkhe (1991) pointed to the importance of developing sophistication—the capability to diagnose important differences between partners and devise novel solutions to accommodate them.

(4) Terminating a collaboration (Serapio & Cascio, 1996). Since most collaborations eventually end, knowing when and how to exit can be critical to a firm's achieving its original objectives without compromising other competitive aspects of its operations (Serapio & Cascio, 1996). Organizations that do not learn how or when to exit may either fall into competency traps (Levitt & March, 1988) or find that their collaborators are ready to exit when they are not (Reich & Mankin, 1986). A construct of collaborative know-how must effectively capture all these issues pertaining to the different phases of a collaboration.

Researchers have increasingly drawn attention to the critical links between learning orientation (Nevis, DiBella, & Gould, 1995), knowledge (Nonaka, 1994), and learning and actual firm performance. Nass (1994) pointed out that the development of both skills and knowledge in a corporation has clear, positive effects on performance. Levinthal and March stated this: "As researchers have considered the stability of differences in firm performance in the face of changing business environments, many have

come to view the ability to learn as an important, indeed in some accounts a unique, source of sustainable competitive advantage" (1993: 96); Helleloid and Simonin (1994) echoed this view, maintaining that developing new organizational learning capabilities and challenging existing organizational routines is critical for guaranteeing core competence enhancement and sustained competitive advantage. Such issues are not only of interest to researchers, but are also under growing scrutiny by practitioners. Laukkanen pointed out that "increasingly, thoughtful managers recognize the role of knowledge and learning in corporate action and performance" (1994: 322). Empirically, Miller and Shamsie (1996) showed in their study of major U.S. movie studios that knowledge-based resources that were difficult to buy or imitate indeed contributed to performance.

In the context of interfirm collaboration, such a relationship between knowledge development and performance remains to be conceptualized and empirically verified. As firms develop collaborative know-how, future collaborations should result in superior tangible and intangible benefits. Increased collaborative know-how in terms of searching for, negotiating, managing, monitoring, and terminating collaborative agreements can provoke more informed decisions about further collaborations and more realistic and achievable objective settings for collaborations.

> *Hypothesis 1a. Firms with higher levels of collaborative know-how will achieve higher levels of tangible benefits from a collaboration.*

This hypothesis partially addresses Miller and Shamsie's concern that "although there are long lists of candidates for valuable resources, there have been very few efforts to establish systematically if, when, and how these resources influence financial performance" (1996: 539).

For completeness, it is also necessary to consider the impact of such resources on other dimensions of corporate performance, learning in particular (intangible benefits). In this respect, Powell, Koput, and Smith-Doerr (1996) argued the following: "The development of cooperative routines goes beyond simply learning how to maintain a large number of ties. Firms must learn how to transfer knowledge across alliances and locate themselves in those network positions that enable them to keep pace with the most promising scientific and technological developments" (1996: 119–120). Similarly, in a collaborative world in which social networks of prior alliances play an important role in shaping future alliance formation by providing conduits for valuable information (Gulati, 1995: 620), firms must become experts at "managing" such strategic information at both the receiving and emitting ends. Such capability calls for a collaborative expertise that cuts across all aspects and phases of an alliance. For instance, it can be extremely difficult to devise contracts for the transfer of tacit knowledge and the attainment of other types of intangible benefits (Grant, 1996; Lei & Slocum, 1992). As a result, the proper level of know-how needed to assist in the selection of partners who will understand, support, and agree to cooperate in this type of

knowledge exchange is particularly critical. The ability to manage collaborations so that these benefits are attained and to monitor the flow or development of information that is by its very nature difficult to measure is also a capability enhanced by collaborative know-how.

> *Hypothesis 1b. Firms with higher levels of collaborative know-how will achieve higher levels of intangible benefits from a collaboration.*

Collaborative Experience

Collaborative experience involves many aspects of a firm's collaborative history. Experience is determined not only by the frequency with which a firm has collaborated with other firms, but also by the intensity, longevity, and types of the collaborations. Some collaborations, like personal relationships, are incredibly intense and involve a great deal of interaction, and others are much more casual. Likewise, some collaborations are very brief, and others last a long time. For instance, Dow Corning, the collaboration between Dow Chemical and Corning Glass, is now itself a *Fortune* 300 firm. Most likely, a firm's propensity to transform collaborative experience into a form of competitive advantage will depend on its capacity to internalize and routinize lessons drawn from a variety of organizational and individual experiments (cf. Cohen & Bacdayan, 1994; Nelson & Winter, 1982; Nonaka, 1994). In fact, a critical foundation for a learning organization is this ability to build from experience, the key to which resides with managers who "see their prime task as facilitating members' experimentation and learning from experience" (Marquardt & Reynolds, 1994: 54).

Collaboration can take a variety of forms, including joint ventures, consortia, equity participation, contractual agreements, and informal cooperations. The particular form of a collaboration may be related both to the partners' specific goals for it and to the firms' experiences and expertise in collaboration (cf. Powell et al., 1996). Rather than focusing on just one of these forms, in this study I looked at a full range of collaborative arrangements when assessing a firm's prior collaborative experience. The actual form chosen for a collaboration may be related to governmental restrictions, managerial incentive systems, or equity market situations, all of which change over time. The construct collaborative experience should reflect all previous experiences of a firm in interfirm collaborations.

In an in-depth study of four firms, Lyles (1988) found that, in fact, these firms had changed their approach to collaboration on the basis of their experiences with past collaborations. Indeed, Powell, Koput, and Smith-Doerr argued this: "Experience at collaborating is necessary to manage a diverse portfolio of ties. Hence, . . . firms learn from exploration and experience how to recognize and structure different types of alliances" (1996: 120–121). Conceptually, the development of such collaborative know-how can occur either through direct collaborative experience or through nonexperiential methods like congenital learning, imitation, grafting, and searching (Huber,

1991). Yet each collaboration is set within the context of particular firms, each with its own routines governing how it responds to change (Nelson & Winter, 1982). Thus, although knowledge about collaborations can be gleaned from external sources, much of this knowledge may not have value until it is internalized and applied to a firm's own unique situation. Firms that have greater levels of collaborative experience are also in a better position to recognize the similarities and differences between their own situations and those of other firms. The effectiveness of imitating, grafting, and searching forms of learning can all be enhanced with prior experience, and even the ability to tap into congenital knowledge may be enhanced through experience.

What knowledge is "stored" and "retrieved" may depend in part upon the knowledge structure already in place in a firm (Lyles & Schwenk, 1992). Organizational routines store organizational experience in a form that allows for a rapid transfer of that experience to new situations (Cohen & Bacdayan, 1994). For instance, the draft of a letter of intent for a new joint venture is likely to reflect a format and content derived from previous experiences with a related, but still very different, context and situation. In that regard, the letter of intent is a manifestation of an organizational routine—the drafting process—that can be partially codified and formally updated over time.

As Pennings, Barkema, and Douma stated, "Organizations evolve as they accumulate experiences, incrementally adjusting their reactions to similar problems while absorbing feedback about past decisions" (1994: 609). Such notions of concrete experience leading to observations and reflections, and in turn, to the formation of abstract concepts and generalizations have long been postulated in various competing models of organizational learning cycles (Kim, 1993; Kolb, 1984). Thus, a positive relationship between collaborative experience and know-how was expected.

> *Hypothesis 2. Firms with greater collaborative experience will achieve higher levels of collaborative know-how.*

This hypothesis, taken at the organizational level, is consistent with the findings of Nass (1994) at the individual level—that greater experience is consistent with greater knowledge. Likewise, the general approach of this study reflects Cyert and March's (1963) view of "the organization as an adaptively rational system that basically learns from experience" (Kim, 1993: 41). The logic of such a relationship is far from trivial, as is suggested by Senge's (1990) "learning dilemma," that people learn best from experience but never directly experience the consequences of many of their most important decisions. According to Senge, organizational learning is constrained by an individual "learning horizon," or the window in time and space through which effectiveness can be assessed and beyond which it is impossible to learn from experience. Likewise, Stata (1989) pointed to the limitations of organizational memory that is dependent on individuals and to the importance of institutional mechanisms: learning builds on past knowledge and experience—that is, memory. The various problems imped-

ing learning (e.g., memory, turnover, conflicts, competency traps, tacitness, superstitious learning, fragmented learning, and learning from small samples) have been well documented by researchers (Corner, Kinicki, & Keats, 1994; March, Sproull, & Tamuz, 1991). Levinthal and March eloquently summarized the general problems of learning from experience by stating this:

> Experience is often a poor teacher, being typically quite meager relative to the complex and changing nature of the world in which learning is taking place. Many of the same cognitive limits that constrain rationality also constrain learning. Learning from experience involves inferences from information. It involves memory. It involves pooling personal experience with knowledge gained from the experiences of others. The difficulties in learning effectively in the face of confusing experience are legendary. Even highly capable individuals and organizations are confused by the difficulties of using small samples of ambiguous experience to interpret complex worlds (1993: 96–97).

METHODS

Sample and Instrument

The population for this study consisted of large and medium-sized U.S. companies. I randomly drew a sample of 1,000 public and privately owned U.S. companies from the *Corptech Directory* after controlling for largeness (defined by sales greater than $50 million and a workforce of more than 500 employees). Since this study was concerned with the overall collaborative phenomenon, it was also important to consider these companies' experience with both domestic and international alliances. The selection of informants was dictated by two key imperatives: (1) an individual's high degree of familiarity with and expert knowledge of one specific international strategic alliance and (2) the individual's ability to report accurately and comprehensively given (a) the strategic nature of the survey's content, (b) its focus on cross-corporate boundaries issues, such as transfers of know-how and performance, and (c) the probing of past corporate experiences with collaborations.

Given these requirements, choosing top executives whose understanding and fields of action pertained to their overall organizations was necessary. As informants, top managers are not only the most able to recognize and assess the relative importance of organizational changes, be they performance or strategy related (Glick, Huber, Miller, Doty, & Sutcliffe, 1990); they are also the most qualified to report specialized information on strategic alliances (cf. Eisenhardt & Schoonhoven, 1996; Geringer, 1991). The firms' top executives were the informants who were the most able to observe and to determine the impacts of specific alliances on the rest of the organizations' activities and were also the most likely to have knowledge of international cases. Thus, I also designed the screening process to target the informants most likely to be knowledgeable about international alliances, taking an

approach similar to Parkhe's (1993) data collection. Informants were selected from the directory and prioritized on the basis of level and responsibility for international operations, corporate development, technology transfer, or joint ventures under the Corptech classification.

The design of the questionnaire, its implementation, and the conduct of the survey were based on the total design method approach (Dillman, 1978). The questionnaire, pretested on 12 executives experienced with strategic alliances, prompted an informant to focus on the current (at least one year old) or the past but recent (terminated less than three years ago) international strategic alliance with which he or she was the most familiar. Informants were invited to select an international collaborative venture as a first choice but were encouraged to refer to a domestic alliance when the former choice was not possible or less appropriate, since the conceptual model being developed and tested concerned both cases. In addition to general facts and descriptive information about the alliance under scrutiny, specific questions related to the partner, the collaborative objectives of each party, the observed impact on the parent companies, and issues of knowledge transfer were asked. Most of the items of the questionnaire followed a seven-point Likert-type scale.

From the 192 companies that participated in the study, 151 fully completed, usable questionnaires were obtained. With respect to the companies' numbers of employees, sales, and ages, no significant differences were observed between the respondent and nonrespondent groups. The majority of the respondents were top executives in some of America's largest corporations. Over 50 percent of the companies included in the study had sales volumes greater than $350 million and workforces larger than 2,500 employees. The strategic alliances still active and represented in the study were, on the average, six years old. At the time of the survey, 12 of the reported alliances had been terminated (6 the year of the survey, 6 others the year before) after averaging a seven-year life span.

Model and Analysis

To assess the direct and indirect relationships among the constructs collaborative experience, collaborative know-how, and tangible and intangible benefits posited in the theoretical model (Figure 1), I used the maximum-likelihood LISREL VII program (Jöreskog & Sörbom, 1989). The two-stage procedure recommended by Anderson and Gerbing (1988) was followed so that the theoretical model could be gauged against competing models (see Hoskisson, Johnson, and Moesel [1994] for a detailed explanation and application of the procedure).

In addition to the structural model, Figure 1 encapsulates the measurement model. Each latent variable in the model is measured by multiple indicators. Table 1 reports the means and standard deviations for all these indicators as well as the correlation matrix used as input for the analyses. Because measuring performance in complex collaborations is inherently difficult (Dussauge & Garrette, 1995; Geringer & Hebert, 1991; Hill & Hellriegel,

FIGURE 1
The Role of Experience and Know-How in Achieving Collaborative Benefits: Theoretical Model

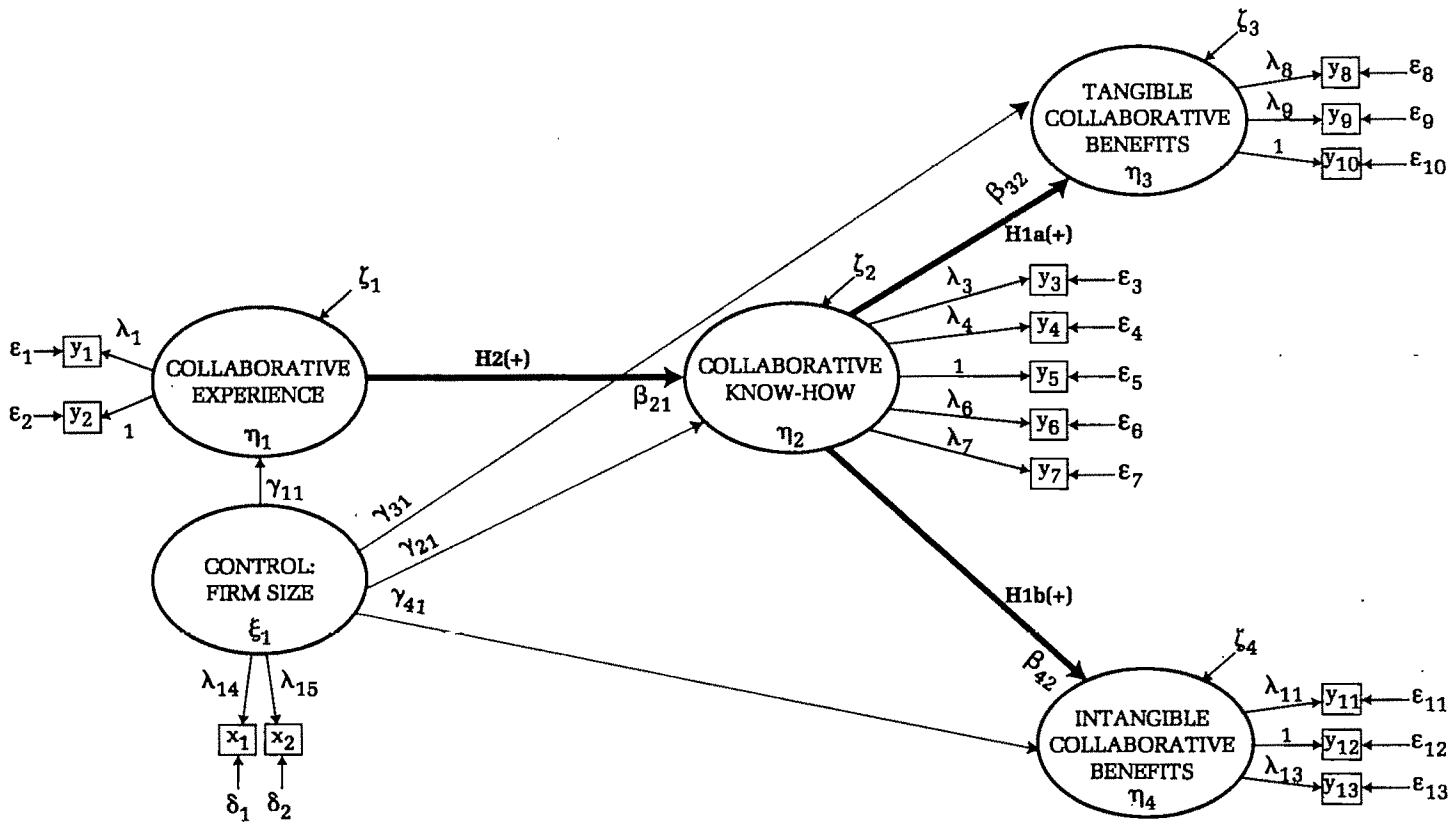

TABLE 1
Means, Standard Deviations, and Correlations[a]

Variable	Mean	s.d.	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	X1	X2
Y1. Experience with structural collaborative forms	3.70	1.27		.41	.20	.33	.32	.13	.33	.01	−.01		−.05	.18	.17	.26	.27
Y2. Experience with functional collaborative modes	3.56	1.05	.57		.24	.42	.38	.31	.31	.18	.12		.21	.25	.23	.36	.36
Y3. Collaborative management know-how	4.47	1.17	.14	.19		.36	.63	.58	.50	.27	.31		.23	.27	.20	.05	.03
Y4. Negotiation know-how	5.27	1.09	.33	.36	.43		.48	.34	.46	.16	.18		.02	.17	.17	.29	.28
Y5. Partner-searching know-how	5.07	1.19	.32	.34	.57	.53		.56	.48	.24	.24		.34	.40	.24	.17	.17
Y6. Knowledge skills	4.58	1.20	.14	.25	.52	.40	.52		.37	.21	.25		.28	.20	.09	.11	.13
Y7. Exiting skills	4.04	1.46	.21	.22	.52	.47	.45	.40		.22	.22		.05	−.01	.18	.28	.30
Y8. Profit contribution/ROI[b]	4.12	1.96	.13	.24	.32	.19	.39	.18	.16		.91		.25	.27	.19	.11	.03
Y9. Market share contribution/ROA[b]	4.57	1.83	.04	.18	.21	.02	.26	.17	.04	.65			.22	.19	.15	.09	.02
Y10. Sustaining competitive advantage/[c]	4.85	1.58	.11	.22	.30	.20	.35	.20	.13	.64	.80						
Y11. Learning about interfirm cooperation	5.05	1.33	.14	.25	.24	.11	.34	.21	.19	.18	.18	.23		.39	.36	−.02	−.07
Y12. Learning skills and competencies from partner	4.21	1.66	.08	.13	.19	.15	.28	.16	.13	.13	.18	.25	.38		.61	.04	−.04
Y13. Learning skills and competencies independent of partner	4.06	1.66	.10	.10	.12	.09	.25	.13	.16	.05	.11	.15	.34	.58		−.03	−.07
X1. Sales	2.68	0.73	.31	.36	.09	.35	.14	.11	.30	.11	.02	.08	.11	.04	.00		.87
X2. Number of employees	3.65	0.71	.32	.37	.05	.33	.09	.09	.28	.05	−.05	.01	.06	.02	−.06	.89	

[a] The lower triangle shows correlations for run 1 (n = 151), and the upper triangle shows correlations for run 2 (n = 73).

[b] The variable to the left of the slash is used in the lower triangle (run 1); the variable to the right is used in the upper triangle (run 2).

[c] No run 2 variable.

1994), I considered both subjective and objective measures of ex post benefits for the parent company that was in the sample. In the first run of the structural equation model (run 1), all the measures of collaborative benefits (for η_3 and η_4) were self-reported measures. To address possible common method bias effects and to cross-validate the results, I performed a second run (run 2), which included a mix of self-reported measures of intangible benefits (η_3) and external, secondary data on tangible benefits (η_2).

Collaborative experience. Two multiple-item scales were used, designated as Y_1 and Y_2 ($r = .57$). Both indicators were derived from Terpstra and Simonin's (1993) taxonomy of strategic alliances. The first manifest variable, Y_1, represented the level of experience with five different structural collaborative forms (informal cooperation, contractual agreements, equity joint ventures, equity purchase/swaps, and consortia) on a seven-point scale for each form (1 = not at all, 4 = moderate, 7 = a great deal). Y_1 was computed as the mean of all these ratings. Likewise, on similar scales, Y_2 represented the level of collaborative experience with the following ten different functional collaborative modes across the value chain (Porter & Fuller, 1986): joint research, joint product development, joint production, joint marketing, licensing and cross-licensing, manufacturing arrangements and subcontracting, distribution (piggybacking) and cross distribution, after-market servicing, franchising, and barter and countertrade. Y_2 is the mean of these ratings.

Collaborative know-how. Five-factor scores were used, designated Y_3 to Y_7 ($\alpha = .82$) to capture the essence of this complex and multifaceted construct in a parsimonious but still meaningful manner. I first performed a factor analysis (SPSS-X's FACTOR procedure) with the maximum-likelihood extraction method and direct "oblimin" rotation on a set of 20 measures developed through the literature review and pretest stages. These measures correspond to the assessed level of corporate expertise with each listed aspect of collaborative know-how on a seven-point Likert-type scale. The analysis generated five factors with eigenvalues greater than 1.0 that accounted for more than 70 percent of the total variance. Y_3, collaborative management know-how (43.7 percent of variance explained), had eight items: building trust with the partner, managing alliance–parent company relations, conflict resolution, logistics and resource transfer, renegotiating initial agreements with partner, staffing, cross-cultural training, and technological assessment. Y_4, negotiation know-how (8.9 percent of variance explained), had five items: estimating asset values and future cash flows, tax aspects, closing the deal, legal aspects, and negotiations. Y_5, partner-searching know-how (7.1 percent of variance explained), had three items: partner selection, partner identification, and understanding strategic implications of collaborating. Y_6, knowledge and skills transfers (5.5 percent of variance explained), had two items: knowledge-skills acquisition and knowledge-skills safeguarding. Y_7, exiting skills (5.2 percent of variance explained), had two items: profit and capital repatriation and exiting from the alliance. From these results, I computed additive factor scores for each

observation, obtaining the five manifest variables for the collaborative know-how construct (η_3).

Performance: Tangible collaborative benefits. One set of three items and a pair of single-item scales were used. The items were designated Y_8 to Y_{10} (α = .87), and the two scales were five-year financial ratio averages, return on investment (ROI) and return on assets (ROA; r = .91). The parameter η_3 captures the extent to which the alliance under consideration contributed to a variety of tangible benefits, including Y_8, generating profits for the parent company; Y_9, improving market share; and Y_{10}, sustaining competitive advantage. All values were recorded on a seven-point perceptual scale (1 = not at all, 4 = moderate, 7 = a great deal). To overcome possible effects of common method bias, I collected the two additional measures of performance, ROI and ROA, from Compact Disclosure's "Worldscope" corporate database. A five-year average of these annual returns was computed, with the year of the survey and the following year as the last two points in the five-year cycle. Full information on 73 companies was available as the basis of the second LISREL run.

Performance: Intangible collaborative benefits. Three single-item scales, designated Y_{11} to Y_{13} (α = .75), were used. As in the construct previously described, three measures of intangible collaborative benefits related to learning issues were considered: Y_{11}, learning about interfirm cooperation; Y_{12}, learning specific skills and competencies held by the partner; and Y_{13}, learning skills and competencies independent of the partner.

Control variable: Firm size. Two single-item scales, X_1 and X_2 (r = .89), were used. Firm size, which has been considered a key impediment to organizational learning (Marquardt & Reynolds, 1994) and a determinant of alliance participation (Berg, Duncan, & Friedman, 1982; Hagedoorn & Schakenraad, 1994), was measured by the logarithms of total sales (X_1) and number of employees (X_2) as reported in the *Corptech Directory*.

RESULTS

Measurement Model

Tables 2 and 3 report the results of structural equation modeling based on Anderson and Gerbing's (1988) recommended two-stage procedure. In the first stage, I evaluated model 0 to ensure that the measurement model was strong before testing the theoretical model. Indeed, the pseudo chi-square test for the null model in Table 3 was nonsignificant (χ^2 = 107.39, df = 90, $p > .10$), indicating that there was no fundamental misspecification in the measurement model. All the constructs displayed satisfactory levels of reliability, as indicated by composite reliabilities ranging from .90 to .95. Similarly, all the Cronbach's alphas were greater than .70, satisfying Nunnally's (1978) minimum criterion for internal consistency. All the factor loadings were significant (t-values greater than 4.87) and were highly related to their respective constructs, in support of convergent validity. Likewise, a

TABLE 2
Parameter Estimates and Goodness of Fit for Structural Model 1, Runs 1 and 2[a]

		Run 1: Self-Evaluations[b]		Run 2: ROI and ROA[b]	
Hypothesis	Parameter	Estimate	*t*	Estimate	*t*
1a	β_{32}	.45***	4.15	.42**	2.76
1b	β_{42}	.40***	3.74	.49***	3.30
2	β_{21}	.47***	3.62	.79**	2.60
Control	γ_{11}	.39***	4.90	.37**	3.24
Control	γ_{21}	.01	0.11	−.11	−0.73
Control	γ_{31}	−.07	−0.83	−.06	−0.48
Control	γ_{41}	−.06	−0.80	−.15	−1.36
	χ^2	111.58		73.68	
	df	83		70	
	p	.02		.36	
	n	151		73	
	GFI	.91		.88	
	AGFI	.87		.81	
	RMSR	.07		.08	
	NFI	.89		.86	
	NNFI	.96		.99	
	CFI	.97		.99	

[a] GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; RMSR = root-mean-square residual; NFI = normed fit index; NNFI = nonnormed fit index; CFI = comparative fit index.

[b] As indicators of the construct tangible collaborative benefits.

** $p < .01$

*** $p < .001$

TABLE 3
Model Statistics and Chi-Square Difference Tests against Theoretical Model 1[a]

Model	Description[b]	χ^2	*df*	*p*	NFI	NNFI	CFI	$\Delta\chi^2$	Δdf	*p*
	Null	107.39	90	>.10						
0	Measurement	107.39	80	.02	.90	.96	.97	4.19	3	>.20
1	Theoretical	111.58	83	.02	.89	.96	.97			
2a	Next-best unconstrained	109.54	81	.02	.90	.96	.97	2.04	2	>.30
2b	Next-best unconstrained	109.23	82	.02	.90	.96	.97	2.35	1	>.10
3	Alternate constrained	125.01	83	.00	.88	.94	.96	−13.43	0	

[a] $N = 151$.

[b] The measurement model (model 0) is a saturated structural model (cf. Bentler & Bonett, 1980); the null model encompasses the chi-square of model 0 and the degrees of freedom of a model where all the interfactor correlations would be dropped; model 2a is the same as theoretical model 1 but has direct paths between experience and the two performance constructs; model 2b is the same as theoretical model 1 but has a direct path between the two performance constructs; model 3 is the same as model 2a but has no path between know-how and the two performance constructs.

series of chi-square difference tests on the factor correlations provided evidence of discriminant validity (Anderson & Gerbing, 1988). In particular, the significant test ($\Delta\chi^2 = 40.57$, $\Delta df = 1$) for the two latent variables tangible and intangible benefits indicated that the two constructs were not perfectly correlated and that discriminant validity had been achieved (Bagozzi & Phillips, 1982). That is, from a measurement-model point of view, tangible and intangible benefits represent two distinct constructs, not one. Their roles must be addressed separately.

Structural Model

Table 2 reports the parameter estimates and goodness-of-fit indicators of the structural equation system for the theoretical model obtained in the first LISREL analysis (run 1). Although the overall chi-square was significant ($\chi^2 = 111.58$, 83 *df*, $p < .02$), as might be expected with this statistic's sensitivity to sample size (Bagozzi & Yi, 1988), all the other fit indexes (nonnormed fit index [NNFI] = .96, normed fit index [NFI] = .89, comparative fit index [CFI] = .97) were within satisfactory ranges and suggested a more adequate fit of the model. In addition, the goodness-of-fit index (GFI = .91), the adjusted goodness-of-fit index (AGFI = .87), and the root-mean-square residual (RMSR = .07) were all within acceptable ranges and showed that the model accounted for a substantial amount of variance (Bagozzi & Yi, 1988). Hence, the model was a reasonable representation of the data.

Under the parameter estimates, collaborative experience (η_1) displayed a significant, positive effect on collaborative know-how (η_2), in support of Hypothesis 2 ($\beta_{21} = .47$, $t = 3.62$). Simultaneously, the construct collaborative know-how showed a significant, positive effect on both tangible and intangible collaborative benefits ($\beta_{32} = .45$, $t = 4.15$; $\beta_{42} = .40$, $t = 3.74$) in support of Hypotheses 1a and 1b; that is, the greater the degree of collaborative know-how, the higher the levels of tangible and intangible benefits obtained from a collaboration. For the control variable company size (ξ_1), a significant effect on collaborative experience was observed ($\gamma_{11} = .39$, $t = 4.90$), indicating that larger companies had more experience with strategic alliances. The summary statistics in Table 3 indicate that model 1 was preferred to model 2a ($\Delta\chi^2 = 2.04$, $\Delta df = 2$, $p > .30$), supporting a model with no direct relationship between collaborative experience and either tangible or intangible collaborative benefits (both direct paths in model 2a were statistically nonsignificant). Hence, results show that experience alone (without collaborative know-how) does not affect performance. Likewise, model 1 was preferred to model 2b ($\Delta\chi^2 = 2.35$, $\Delta df = 1$, $p > .10$) and to model 3 ($\chi^2 = 111.58$ vs. $\chi^2 = 125.01$, same *df*), further underlining the relevance of know-how as a mediator between experience and performance. In sum, the proposed theoretical model represented the preferred and most acceptable and parsimonious model.

To further understand the role of company size as a possible moderator of the postulated learning process, I performed a complementary analysis by

first dividing the sample into two groups (split at the median on size) and then running a multiple-group analysis (Jöreskog & Sörbom, 1989). No statistically significant difference in the results for the two groups emerged even though both groups displayed fundamentally different characteristics (average number of employees, 1,192 vs. 21,040; average sales, $241 million vs. $2,433 million). The chi-square difference test (χ^2_d [5, $n_1 = 74$, $n_2 = 75$] = 2.74, $p > .70$) between the null model (where the structural paths were freely estimated for both groups simultaneously) and the restricted model (where all the paths were constrained to be equal across groups) showed that company size did not affect the nature and magnitude of the hypothesized relationships among experience, know-how, and collaborative benefits.

DISCUSSION

Contributions

The results indicate that firms do learn from past collaborations by developing skills in identifying potential collaborators, negotiating the form and specifics of collaborative agreements, managing and monitoring the arrangements, knowing when to terminate them, and transferring knowledge. This collaborative know-how in turn allows firms to achieve greater benefits from collaborations. The results also demonstrate that previous collaborative experience alone does not ensure that a firm will benefit from a collaboration. That is, experience is only valuable if the lessons of this experience (both positive and negative) are internalized by the firm and drawn into specific know-how that can be used to guide future actions. These results point to the criticality of building a learning organization (Senge, 1990; Stata, 1989) that can effectively utilize past experience when entering new collaborations.

The results supporting the relationship between collaborative experience and know-how stress the importance of experiential learning in developing collaborative know-how. These results are consistent with those of Lyles (1988): experience is critical in creating know-how that is tailored to specific firms. Although the process by which experience leads to know-how is often taken for granted, managing this process is problematic for firms. Organizations often cannot assess what they know because of forces of specialization or departmentalization, and when they can, they may still not be able to anticipate future needs for particular information that may, as a result, get discarded (Huber, 1991). Under such conditions, the formalization of particular knowledge may be prevented, or the know-how may become dysfunctional in that it lacks important components.

The results of this study may also shed some additional light on prior studies that have failed to substantiate a direct impact of past experience with collaboration on firms' performance. For instance, in his study of North American–Japanese joint ventures, Inkpen (1995) found that neither the experience of having previously managed a joint venture nor the experience of having worked before with a given partner affected the learning efforts of

parent companies. Similarly, in their study of internal corporate joint ventures, Shortell and Zajac (1988) rejected the hypothesis of a positive relationship between past experience and the profitability of new joint ventures. Whereas this study points to a similar lack of direct effect, it nonetheless reveals that an indirect effect exists, mediated through the construct know-how. In that sense, collaborative know-how may constitute a missing link of theoretical and practical importance. Further refinements of the construct can be envisioned to provide practitioners with a more powerful self-assessment tool or researchers with more specialized scales, but these first findings begin to address Miller and Shamsie's (1996) concern about the difficulties of operationally defining the notion of resources and, therefore, conducting empirical work based upon the resource-based view of the firm.

In its modeling of performance, this study follows a research tradition that calls for an explicit distinction between learning-based and financial motives in strategic alliances (cf. Crossan & Inkpen, 1994; Dodgson, 1996; Hamel, 1991; Pucik, 1988). The results are consistent with this view, as evidenced by the reported discriminant validity between tangible (η_3) and intangible (η_4) benefits in the measurement model and by the simultaneous impact of collaborative know-how (and the lack of a direct effect for experience) on these two distinct constructs.

Finally, whereas the study showed that larger companies have more experience with strategic alliances, a result consistent with previous research (Bert et al., 1982; Hagedoorn & Schakenraad, 1994), it also, more importantly, revealed that company size does not affect the significance and magnitude of the relationships postulated among experience, know-how, and performance. That is, the process itself as encapsulated in the model of simultaneous equations is not subject to the structural impediments that corporate largeness or smallness typically triggers (cf. Marquardt & Reynolds, 1994). Still, these results should be challenged with other organizational forms, such as start-up companies. Although the process itself may be invariant, no inferences can be made with respect to efficiency levels or outcomes. The question of small organizations' being more or less efficient learners or more or less successful alliance participants remains to be explored directly.

Limitations

With respect to the present results, a number of caveats pertaining to common method, single-respondent, and social desirability biases should be acknowledged. To address the possibility of common method bias, I adopted two distinct approaches. First, following Scott and Bruce (1994) and Konrad and Linnehan (1995), I performed Harman's one-factor test on the questionnaire measurement items. The resulting principal components factor analysis yielded 12 factors with eigenvalues greater than 1.0 that accounted for 70 percent of the total variance. Since several factors, as opposed to one single factor, were identified, and since the first factor did not account for the majority of the variance (only 22 percent), a substantial amount of common

method variance does not appear to be present (Podsakoff & Organ, 1986). Second, as described above, accounting measures of performance (ROI and ROA) were substituted for the self-reported measures of tangible benefits to retest the appropriateness of the theoretical model. Following the exact same steps as in the earlier analysis, I used Anderson and Gerbing's (1988) two-step procedure and obtained very similar results (Table 2, run 2). Although the results of this analysis with external measures of performance provide further support for the hypothesized model, the presence of common method problems cannot be fully discarded.

An important methodological imperative for this study was for each informant to be highly familiar and involved with one specific alliance as well as highly knowledgeable about overall corporate activities and performance across divisional boundaries. In this respect, the study was considered satisfactory since the majority of the respondents were top executives in their respective organizations and since over 77 percent of them had been actively involved with their selected alliances since their inceptions (another 16 percent had been involved for at least half of the alliances' lives). Given the singular and highly specialized expertise associated with these informants, a single-informant approach was used. Since in large companies a strong tendency exists for upper-echelon executives to act not as teams but rather, as "mere constellations of executive talents" immersed in specialized and distinct domains (Hambrick, 1995: 115), I did not believe that a second informant could bring the same degree of expert knowledge to this study; including less knowledgeable informants would have led to less rather than more accurate information and therefore would not have improved the original estimates. To insure data reliability, I gave careful attention to the assessment of the construct reliabilities and have described above the satisfactory Cronbach alphas and levels of theoretical reliability established through causal modeling.

Whereas survey data are sometimes subject to social desirability bias (Arnold & Feldman, 1981; Podsakoff & Organ, 1986), I did not perceive such bias to be a major concern for this study. Following previous research showing that anonymity reduces social desirability bias in studies of sensitive topics (cf. Konrad & Linnehan, 1995), I designed and implemented the survey to guarantee respondents' anonymity. The topic of investigation, although strategic and often confidential, was not thought to be so highly sensitive (see Konrad and Linnehan [1995] for illustrations) as to be likely to prompt responses that would present the respondent or the organization in a favorable light. The original eagerness and candor of the executives who participated in the pretest seemed to support this view. However, the occurrence of such bias cannot be totally ruled out.

Future Research Directions

Although this study reflects the commonly acknowledged notion that learning builds on past experience (Cyert & March, 1963; Levinthal & March, 1993; Nass, 1994), it is not an attempt to measure the extent to which firms

undertake nonexperiential learning. The propensity of firms to develop collaborative know-how without actual collaborative experience remains to be explored as an alternate, complementary hypothesis. Focusing on the relative importance of nonexperiential forms of learning could shed additional light on the relative effectiveness of various learning approaches and on the reasons why some firms are poor at learning from collaborative experience, as the results of Lyles's (1988) case studies suggest.

This study did not investigate the link between individual and organizational experience, know-how, and learning (cf. Corner et al., 1994; Kim, 1993; Kogut & Zander, 1992). Since collaborative know-how may be spread throughout an organization, with individuals from different parts of the organization learning and contributing to its knowledge base, the challenge for many firms is to properly isolate, capture, and disseminate such know-how. Some companies, like Boeing, proceed by encouraging systematic and organized reflections by the various stakeholders and participants on particular situations the company has experienced (e.g., the 777 project or alliances with Japanese partners). In doing so, these companies try to crystallize individual and sometimes disconnected involvement into an aggregate understanding through group sharing and interpretation. In other instances, specialized know-how is internalized, updated, and managed by experts or expert teams who serve as a knowledge base repository (e.g., in the past, IBM has concentrated a lot of its collaborative know-how pertaining to partner selection and alliance formation into a small corporate team of specialists handling a multitude of leads and situations throughout the organization). As these two examples underline, the role of individuals in the development and use of collaborative know-how may vary greatly across firms and, as such, warrants further investigation.

The model tested in this study concerns the fundamental relationship between experience, knowledge, and performance at a macro level and thus remains generic and parsimonious. A stronger focus on knowledge creation and transfer (e.g., Crossan & Inkpen, 1994; Nonaka, 1994) within strategic alliances could motivate extensions of this model to incorporate firm- and alliance-specific variables such as strategic intent, transparency, organizational capabilities, and resource commitments that typically relate to models of interfirm learning at a more micro level (Hamel, 1991).

Finally, this study has focused on one type of organizational knowledge, collaborative know-how. Yet the general outline of this research could be applied to other types of knowledge. For example, this research could be extended to a particular form of collaboration, such as mergers and acquisitions. Much could be learned from the formulation of a merger and acquisition know-how construct and its antecedents and effects on firm performance in light of previous research (e.g., Pennings et al., 1994). As a second example, assessing product development know-how could prove useful to researchers and practitioners interested in improving the new product development process or in understanding why firms have different rates of success in bringing new products to market.

Addressing the need noted by Huber (1991), Fiol (1994), and Miller and Shamsie (1996), and despite its limitations, this study constitutes an effort to advance the study of organizational knowledge creation, which typically has lacked large-sample investigation. Understanding of both strategic alliances and the learning organization will benefit from future research that values similar empirical undertakings.

REFERENCES

Anderson, J. C., & Gerbing, D. W. 1988. Structural equation modeling in practice: A review and recommended two-step approach. ***Psychological Bulletin,*** 103: 411–423.

Arnold, H. J., & Feldman, D. C. 1981. Social desirability response bias in self-report choice situations. ***Academy of Management Journal,*** 24: 377–385.

Bagozzi, R., & Phillips, L. 1982. Representing and testing organizational theories: A holistic construal. ***Administrative Science Quarterly,*** 27: 459–489.

Bagozzi, R., & Yi, Y. 1988. On the evaluation of structural equation models. ***Journal of the Academy of Marketing Science,*** 16: 77–94.

Barney, J. B. 1991. Introduction to special issue on the resource based view of the firm. ***Journal of Management,*** 17: 97–99.

Bentler, P., & Bonett, D. G. 1980. Significance tests and goodness of fit in the analysis of covariance structures. ***Psychological Bulletin,*** 88: 588–606.

Berg, D. 1993. Experience can be the worst teacher. ***Journal of Quality and Participation,*** 16(2): 24–26.

Berg, S. V., Duncan, J., & Friedman, P. 1982. ***Joint venture strategies and corporate innovation.*** Cambridge, MA: Oelgeschlager.

Cohen, M. D., & Bacdayan, P. 1994. Organizational routines are stored as procedural memory: Evidence from laboratory study. ***Organization Science,*** 5: 554–568.

Contractor, F. J., & Lorange, P. 1988. Why should firms cooperate? The strategy and economics basis for cooperative ventures. In F. J. Contractor & P. Lorange (Eds.), ***Cooperative strategies in international business:*** 3–28. Lexington, MA: Lexington Books.

Corner, P. D., Kinicki, A. J., & Keats, B. W. 1994. Integrating organizational and individual information processing perspectives on choice. ***Organization Science,*** 5: 294–308.

Crossan, M. M., & Inkpen, A. 1994. Promise and reality of learning through alliances. ***International Executive,*** 36: 263–273.

Crossan, M. M., & Inkpen, A. 1995. The subtle art of learning through alliances. ***Business Quarterly,*** 60(2): 69–78.

Cyert, R., & March, J. 1963. ***A behavioral theory of the firm.*** Englewood Cliffs, NJ: Prentice-Hall.

Dillman, D. 1978. ***Mail and telephone surveys: The total design method.*** New York: Wiley.

Dodgson, M. 1996. Learning, trust and inter-firm technological linkages: Some theoretical associations. In R. Coombs, A. Richards, P. Saviotti, & V. Walsh (Eds.), ***Technological collaboration:*** 54–75. Cheltenham, U.K.: Edward Elgar.

Dussauge, P., & Garrette, B. 1995. Determinants of success in international strategic alliances: Evidence from the global aerospace industry. ***Journal of International Business Studies,*** 26: 505–530.

Eisenhardt, K., & Schoonhoven, D. 1996. Resource-based view of strategic alliance formation: Strategic and social effects in entrepreneurial firms. ***Organization Science,*** 7: 136–150.

Fiol, C. M. 1994. Consensus, diversity, and learning in organizations. ***Organization Science,*** 5: 403–420.

Fiol, C. M., & Lyles, M. A. 1985. Organizational learning. ***Academy of Management Review,*** 10: 803–13.

Ganitsky, J., & Watzke, G. E. 1990. Implications of different time perspectives for human resource management in international joint ventures. ***Management International Review,*** 30(special issue): 37–51.

Geringer, M. J. 1991. Strategic determinants of partner selection criteria in international joint ventures. ***Journal of International Business Studies,*** 22: 41–62.

Geringer, M. J., & Hebert, L. 1991. Measuring performance of international joint ventures. ***Journal of International Business Studies,*** 22: 249–263.

Glaister, K. W., & Buckley, P. J. 1996. Strategic motives for international alliance formation. ***Journal of Management Studies,*** 33: 301–332.

Glick. W. G., Huber, G. P., Miller, C. C., Doty, D. H., & Sutcliffe, K. M. 1990. Studying changes in organizational design and effectiveness: Retrospective event histories and periodic assessments. ***Organization Science,*** 1: 293–312.

Gomes-Casseres, B. 1996. ***The alliance revolution.*** Cambridge, MA: Harvard University Press.

Grant, R. M. 1996. Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. ***Organization Science,*** 7: 375–387.

Gulati, R. 1995. Social structure and alliance formation patterns: A longitudinal study. ***Administrative Science Quarterly,*** 40: 619–652.

Hagedoorn, J., & Schakenraad, J. 1994. The effect of strategic technology alliances on company performance. ***Strategic Management Journal,*** 15: 291–309.

Hambrick, D. C. 1995. Fragmentation and the other problems CEOs have with their top management teams. ***California Management Review,*** 37(3): 110–127.

Hamel, G. 1991. Competition for competence and inter-partner learning within international strategic alliances. ***Strategic Management Journal,*** 12(special issue): 83–103.

Harrigan, K. R. 1988. Joint ventures and competitive strategy. ***Strategic Management Journal,*** 9: 141–158.

Helleloid, D., & Simonin, B. L. 1994. Organizational learning and a firm's core competence. In G. Hamel & A. Heene (Eds.), ***Competence based competition:*** 213–239. New York: Wiley.

Hill, R. C., & Hellriegel, D. 1994. Critical contingencies in joint venture management: Some lessons from managers. ***Organization Science,*** 5: 594–607.

Hladik, K. J. 1985. ***International joint ventures.*** Lexington, MA: Lexington Books.

Hoskisson, R. E., Johnson, R. A., & D. D. Moesel. 1994. Corporate divestiture intensity in restructuring firms: Effects of governance, strategy, and performance. ***Academy of Management Journal,*** 37: 1207–1251.

Huber, G. P. 1991. Organizational learning: The contributing processes and the literature. ***Organization Science,*** 2: 88–115.

Inkpen, A. 1995. Organizational learning and international joint ventures. ***Journal of International Management,*** 1: 165–198.

Jöreskog, K., & Sörbom, D. 1989. ***LISREL VII*** (2nd ed.). Chicago: SPSS.

Kim, D. 1993. The link between individual and organizational learning. ***Sloan Management Review,*** 35(1): 37–50.

Kogut, B. 1988. Joint ventures: Theoretical and empirical perspectives. ***Strategic Management Journal,*** 9: 319–332.

Kogut, B., & Zander, U. 1992. Knowledge of the firm, combinative capabilities, and the replication of technology. ***Organization Science,*** 3: 383–397.

Kolb, D. 1984. ***Experiential learning: Experience as the source of learning and development.*** Englewood Cliffs, NJ: Prentice-Hall.

Konrad, A. M., & Linnehan, F. 1995. Formalized HRM structures: Coordinating equal employment opportunity or concealing organizational practices? ***Academy of Management Journal,*** 38: 787–820.

Lane, H. W., & Beamish, P. W. 1990. Cross-cultural cooperative behavior in joint ventures in LDCs. ***Management International Review,*** 30(special issue): 87–102.

Laukkanen, M. 1994. Comparative cause mapping of organizational cognitions. ***Organization Science,*** 5: 322–343.

Lei, D., & Slocum, J. W. 1992. Global strategy, competence-building and strategic alliances. ***California Management Review,*** 35(1): 81–97.

Levinthal, D. A., & March, J. G. 1993. The myopia of learning. ***Strategic Management Journal,*** 14: 95–112.

Levitt, B., & March, J. G. 1988. Organizational learning. In W. R. Scott (Ed.), ***Annual review of sociology,*** vol. 14: 319–340. Palo Alto, CA: Annual Reviews.

Lorange, P., & Roos, J. 1990. Formation of cooperative ventures: Competence mix of the management team. ***Management International Review,*** 30(special issue): 69–86.

Lyles, M. A. 1988. Learning among joint venture sophisticated firms. ***Management International Review,*** 28(special issue): 85–98.

Lyles, M. A., & Schwenk, C. R. 1992. Top management, strategy and organizational knowledge structures. ***Journal of Management Studies,*** 29: 155–174.

March, J. G., Sproull, L. S., & Tamuz, M. 1991. Learning from samples of one or fewer. ***Organization Science,*** 2: 1–13.

Marquardt, M., & Reynolds, A. 1994. ***The global learning organization.*** New York: Irwin.

Miller, D., & Shamsie, J. 1996. The resource-based view of the firm in two environments: The Hollywood film studios from 1936 to 1965. ***Academy of Management Journal,*** 39: 519–543.

Minkler, A. 1993. Knowledge and internal organization. ***Journal of Economic Behavior and Organization,*** 21: 17–30.

Nass, C. 1994. Knowledge or skills: Which do administrators learn from experience? ***Organization Science,*** 5: 38–50.

Nelson, R. R., & Winter, S. G. 1982. ***An evolutionary theory of economic change.*** Cambridge, MA: Belknap Press.

Nevis, E. C., DiBella, A. C., & Gould, J. M. 1995. Understanding organizations as learning systems. ***Sloan Management Review,*** 36(2): 73–85.

Nonaka, I. 1994. A dynamic theory of organizational knowledge creation. ***Organization Science,*** 5: 14–37.

Nonaka, I., & Takeuchi, H. 1995. ***The knowledge creating company.*** London: Oxford University Press.

Nunnally, J. 1978. ***Psychometric theory*** (2nd ed.). New York: McGraw-Hill.

Ohmae, K. 1989. The global logic of strategic alliances. ***Harvard Business Review,*** 67(2): 143–154.

Parkhe, A. 1991. Interfirm diversity, organizational learning, and longevity in global strategic alliances. ***Journal of International Business Studies,*** 22: 579–601.

Parkhe, A. 1993. Strategic alliance structuring: A game theoretic and transaction cost examination of interfirm cooperation. ***Academy of Management Journal,*** 36: 794–829.

Pennings, J. M., Barkema, H., & Douma, S. 1994. Organizational learning and diversification. ***Academy of Management Journal,*** 37: 608–640.

Podsakoff, P. M., & Organ, D. W. 1986. Self-reports in organizational research: Problems and prospects. ***Journal of Management,*** 12: 531–544.

Porter, M., & Fuller, M. 1986. Coalitions and global strategy. In M. Porter (Ed.), ***Competition in global industries:*** 315–343. Boston: Harvard Business School Press.

Powell, W. W., Koput, K. W., & Smith-Doerr, L. 1996. Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. ***Administrative Science Quarterly,*** 41: 116–145.

Prahalad, C. K., & Hamel, G. 1990. The core competence of the corporation. ***Harvard Business Review,*** 68(3): 79–91.

Pucik, V. 1988. Strategic alliances, organizational learning, and competitive advantage: The HRM agenda. ***Human Resource Management,*** 27: 77–93.

Reed, R., & DeFillippi, R. J. 1990. Causal ambiguity, barriers to imitation, and sustainable competitive advantage. ***Academy of Management Review,*** 15: 88–102.

Reich, R., & Mankin, E. 1986. Joint ventures with Japan give away our future. ***Harvard Business Review,*** 64(2): 78–86.

Scott, S. G., & Bruce, R. A. 1994. Determinants of innovative behavior: A path model of individual innovation in the workplace. ***Academy of Management Journal,*** 37: 580–607.

Senge, P. M. 1990. ***The fifth discipline: The art and practice of the learning organization.*** New York: Doubleday.

Serapio, M., & Cascio, W. 1996. End-games in international alliances. ***Academy of Management Executive,*** 10(1): 62–73.

Shortell, S. M., & Zajac, E. J. 1988. Internal corporate JVs: Development processes and performance outcomes. ***Strategic Management Journal,*** 9: 527–542.

Stata, R. 1989. Organizational learning—The key to management innovation. ***Sloan Management Review,*** 30(3): 63–74.

Tallman, S., & Shenkar, O. 1994. A managerial decision model of international cooperative venture formation. ***Journal of International Business Studies,*** 25: 91–113.

Terpstra, V., & Simonin, B. L. 1993. Strategic alliances in the triad: An exploratory study. ***Journal of International Marketing,*** 1(1): 4–25.

Van de Ven, A., & Polley, D. 1992. Learning while innovating. ***Organization Science,*** 3: 92–116.

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FINANCIAL CONSEQUENCES OF EMPLOYMENT-CHANGE DECISIONS IN MAJOR U.S. CORPORATIONS

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Using data from companies in the Standard & Poor's 500 between 1980 and 1994, we examined 5,479 occurrences of changes in employment in terms of two dependent variables: profitability (return on assets) and return on common stock. Firms that engaged in pure employment downsizing did not show significantly higher returns than the average companies in their own industries. However, companies that combined employment downsizing with asset restructuring generated higher returns on assets and stock returns than firms in their own industries.

Throughout the 1980s and the 1990s, news of corporate downsizings has been prominent in the media. In the United States, 43 million jobs were eliminated between 1979 and 1995, according to an analysis by the *New York Times* of Labor Department Data (Uchitelle & Kleinfield, 1996). Although far more jobs were created than were lost over that period, for a net increase of 27 million, the phenomenon of employment downsizing has produced fundamental structural changes in our economy and has had painful impacts on the American labor force.

Presumably, firms decrease their workforces to improve their performance and to increase their ability to compete. It seems obvious that firms should be able to decrease their labor costs by reducing employment levels. The lower labor costs should result either in increased earnings or in the ability to control product prices to improve competitiveness. Ultimately, the market value of a firm's shares should improve. Indeed, there is some evidence that American business has increased its global competitiveness over the last 15 years (*Business Week,* 1995; Kirkland, 1997; Roth, 1995). Some of this improvement may be due to firms becoming "lean and mean" by cutting redundant employees.

However, it is not clear that firms that have engaged in major employment downsizings have actually been able to accomplish these obvious objectives. There has been relatively little systematic analysis of the financial performance of downsizing firms. One such study, by Worrell, Davidson, and Sharma (1991), had mixed results, contrary to perceptions in the investment community that layoffs are good for the stock price of a company

(Sloan, 1996). Worrell and colleagues examined the impact of layoff announcements on stock returns for a sample of 194 firms that announced layoffs during the period 1979–87. Using standard event-study methods, they examined the stock returns of downsizing companies for the period from 90 days prior to the announcement of the downsizing in the *Wall Street Journal* to 90 days after the announcement. For the sample as a whole, there was a significantly negative market reaction to the announcements, with the cumulative loss in stock value being about 2 percent of the value of the equity of the firms. For firms that provided restructuring and consolidation as the reason for the layoffs, there was a 3.6 percent increase in stock value over the 180-day test period. For firms that gave financial distress as the reason for the layoffs, stock values declined an average of 5.6 percent over the test period.

Although Worrell and colleagues (1991) provided evidence of stock market reaction to layoff announcements over a short period, their results do not tell us whether downsizing companies were able to increase profits or stock prices over a longer period of analysis. The present study does this using 5,479 occurrences of changes in employment over a 15-year period, 1980 to 1994. To help guide our research, we developed the following conceptual framework for the relationship between employment costs and financial performance.

EMPLOYMENT COSTS AND FINANCIAL PERFORMANCE

A fundamental assumption is that a firm's executives seek to operate efficiently with minimum costs and that they choose to downsize in order to decrease their employment costs. This premise implies that management thinks that the firm's goals (output, revenue, earnings) can still be attained with fewer employees.

Firms that have the greatest need to cut employees will be those that are not performing well—that is, those for which costs are greatest and returns are least. Employment downsizing will be seen as a way to improve performance by cutting employment costs. However, several factors could limit the presumed benefits of downsizing. Among these would be mediating variables such as attitudes and behaviors employees might demonstrate in response to the downsizings. Survivors' syndrome (Brockner, 1988) is a typical consequence of employment downsizing that could potentially counteract the cost-cutting benefits of the downsizing process. Nevertheless, it is still an empirical question whether companies have been able to improve their performance over time with employment downsizings, and that was the primary focus of this study. A fundamental issue is the nature of financial performance and how to measure it.

A standard measure of the financial performance of a firm is return on assets (ROA), measured as operating income before depreciation, interest, and taxes (*OIBDP*) divided by total assets (*AT*). For example, others who have examined the financial performance of firms in response to managerial

actions (Healy, Palepu, & Ruback, 1992; Kaplan, 1989; Ofek, 1994), have focused on *OIBDP/AT* as a measure of the cash-flow return on assets before and after the event they were studying. Any changes in the performance of a firm that result from employment downsizing should show up in the ROA measure. It can be shown that ROA can be expressed as:

OIBDP/AT = [(*sales/EMP*)(*EMP/AT*)] [(1 − *CGS/sales*) − (*SGA/sales*) + (*depreciation/sales*)], where *sales/EMP* denotes sales per employee, *EMP/AT* measures the use of labor relative to invested capital, *CGS* denotes the cost of goods sold, and *SGA* denotes selling, general, and administrative expenses. Thus, ROA reflects the level of employment by way of the following firm-level financial performance ratios: production cost (*CGS/sales*), administrative cost (*SGA/sales*), employee productivity (*sales/EMP*), and the ratio of employees to capital (*EMP/AT*). Costs of labor normally are included in *CGS* and *SGA*.

In addition to financial performance, as reflected in cost ratios and ROA, management is interested in stock performance, which is the ultimate performance measure from the shareholders' point of view. Consequently, like Worrell and colleagues (1991), we used stock returns as a measure of performance for evaluating the benefits of employment downsizing.

Some of the earliest explorations of stock market efficiency (Ball & Brown, 1968; Watts, 1978) showed that news regarding a firm's earnings was reflected quickly in stock prices. Hence, changes in employment that increase (decrease) earnings or that cause investors to expect higher (lower) future earnings should lead to changes in stock prices.

In the present study, we sought to determine whether companies that have engaged in major employment downsizings have been able to improve their financial performance as measured by ROA and total returns on common stock. To do so, we tested the following two null hypotheses:

> *Hypothesis 1. Changes in employment will have no effect on profitability in the year of the changes and in the two succeeding years.*
>
> *Hypothesis 2. Changes in employment will have no effect on total return on common stock in the year of the changes and in the two succeeding years.*

METHODS

The Sample

We examined the set of management decisions about employment levels made by all companies included in the Standard & Poor's (S&P) 500 over the 12-year period 1981–92. If there were no missing data and the same companies were included in the S&P 500 every year, each company would be included in the sample in each of the 12 years, and we would have 6,000 occurrences. However, because the composition of the S&P 500 changes over time, and because companies are excluded when data are missing, the num-

ber of companies in the sample was 537, and the number of employment-change occurrences in our sample was 5,479. Eighty-nine percent of the firms had data in every year of the analysis.

We obtained data from the November 1995 Standard & Poor's COMPUSTAT CD-ROM database, which contains complete data through year-end 1994. We extracted data on individual companies for the years 1980 through 1994 to investigate the impact of changes in numbers of employees on the financial performance of firms in the years of events and in the two succeeding years.

The primary variable of interest in this study was change in employment from one year to the next, as reported in the COMPUSTAT database. Over the period of the study, some companies increased their levels of employment, others decreased their levels of employment, and many did both at various times. Moreover, some changed their employment through hiring and/or layoffs, and others reported employment changes that must have resulted from purchasing or selling plants or divisions. For example, suppose a firm reports a 10 percent reduction in employment from time 0 to time 1. That reduction in employment could be due to a decision to lay off employees without any reduction in assets, or it might be due to a decision to sell off unprofitable plants or divisions. The former set of circumstances represents a pure employment downsizing, and the latter represents a downsizing with divestiture. The two scenarios might have different impacts on the performance variable being considered. For example, the market might react differently over time to a divestiture than it would to a pure downsizing. By considering changes in employment *relative* to changes in assets, we could take account of most of the effects of changes in these two variables.

To distinguish between the impacts of (1) employment increases and decreases and (2) pure employment changes and asset acquisitions or divestitures, we classified each firm into one of four mutually exclusive categories in each period of the study, as follows:

Employment downsizers were companies in which the decline in employment was greater than 5 percent and the decline in plant and equipment was less than 5 percent. There were 722 occurrences, or 13.2 percent of the total, in this category.

Asset downsizers were companies with a decline in employment of more than 5 percent and a decline in plant and equipment that exceeded the change in employment by at least 5 percent. There were 88 occurrences, or 1.6 percent of the total, in this category.

Combination downsizers were companies that reduced the number of employees by more than 5 percent but did not fit into either of the two categories above. There were 226 occurrences, or 4.1 percent of the total, in this category.

Stable employers were companies with changes in employment between plus or minus 5 percent. The modal number of occurrences fell in this category. There were 2,568 occurrences, or 46.9 percent of the total, in this category.

Although our focus was on downsizing, we also categorized companies on the basis of their employment growth, defining three more categories relating to employment "upsizing" as follows:

Asset upsizers were companies with an increase in employment of 5 percent or more and an increase in plant and equipment that exceeded the change in employment by at least 5 percent. There were 833 occurrences, or 15.2 percent of the total, in this category.

Employment upsizers were companies in which the increase in employment was greater than 5 percent and the increase in plant and equipment was less than 5 percent. There were 287 occurrences, or 5.2 percent of the total, in this category.

Combination upsizers were companies that increased employment more than 5 percent but did not fit into either of the other upsizing categories. There were 755 occurrences, or 13.8 percent of the total, in this category.

We recognize that our classification of companies as downsizers, upsizers, or stable employers is somewhat arbitrary. For stable employers, we chose ±5 percent, relative to a base year, as a cutoff point. We considered 3 and 10 percent as alternative limits, but concluded that using ±3 percent placed in the downsizing categories too many companies that could have reduced their employment that much merely through attrition and not through conscious downsizing decisions. Using ±10 percent, however, excluded from the downsizing categories many larger companies that had announced and implemented downsizings that were quite large in terms of the absolute numbers of employees affected.

Data

We extracted data on individual companies for the years 1980 through 1994 to investigate the impact of changes in the number of employees on the financial performance of firms in the year of a downsizing event (year 0) and in the two succeeding years (years 1 and 2). For each company, we collected measures of profitability and stock return, along with industry-aggregate measures of each of the variables. Measures of industry-aggregate variables are defined in *Standard & Poor's COMPUSTAT User's Guide* (1995).[1] We used these specific variables, identified here with the same abbreviations that are used in the COMPUSTAT CD-ROM database: number of employees (*EMP*), operating income before depreciation, interest, and taxes (*OIBDP*), plant and equipment (*PPENT*), total assets (*AT*), dividends on common stock (*DVPSX*), and price of common stock, end-of-year close (*PRCC*).

For each event year in the study period, 1981 through 1992, we calculated the change in employment as the ratio $REMP_0 = EMP_0/EMP_{-1}$, where

[1] COMPUSTAT provides aggregate total data for an industry based on its Standard Industrial Classification (SIC) code. Our industry ratios are the ratios of the industry-aggregate variables. If the number of companies in an industry is small or the data are unavailable, COMPUSTAT does not produce the industry-aggregate data. Stock returns for the industry are equally weighted portfolios of the companies in the industry SIC group.

the subscripts denote the year, with 0 for the event year and −1 for the prior year. The subscripts 1 and 2 denote the first and second years following the year of the employment-change event. If employment data were unavailable for the year of analysis and the prior year, we excluded the company from the sample for that year. In addition, we calculated the change in plant and equipment as the ratio $RPENT = PPENT_0/PPENT_{-1}$, to measure the extent to which capital assets were acquired or divested in the event year.

To measure the improvement or decline in profitability, we calculated differences in ROA between the base period, $t = -1$, and the periods $t = 0$, 1, and 2 as:

$$\Delta ROA_t = OIBDP_t/AT_t - OIBDP_{-1}/AT_{-1}.$$

The return to the stockholders surrounding the change in employment was equal to the dividend yield plus price appreciation in each one-year period—time periods 0, 1, and 2:

$$Stock\ return = (PRCC_t - PRCC_{t-1} + DVPSX_t)/PRCC_{-1}.$$

We used industry-aggregate variables to generate industry-adjusted measures for the performance ratio by subtracting the corresponding industry ratio from the company ratio. As with the direct measures of company performance, we calculated the industry performance-change measures relative to the performance in time period −1. For performance measures calculated relative to the industry, the empirical question was, Are companies doing any better or worse relative to their industries than they were in time period −1? With respect to the stock return, by subtracting the industry-average stock return, we were implicitly factoring out the return on stocks with the same level of systematic market risk (beta), because firms in the same industry typically have about the same level of market risk.

RESULTS

Table 1 shows the average percentage change in employment for each company category. The first data column is the change in the number of employees in the event year (year 0) measured from the base year (year −1). The second and third columns are the employment changes in years 1 and 2. The numbers in parentheses beneath the changes are the standard deviations of the percentage employment changes for the samples in each category. The number of occurrences in the sample in each category is indicated as *n*. Among the three categories of downsizing occurrences, the (weighted) average decline in employment in year 0 was −13.3 percent, and the average increase in employment among the three categories of upsizers was 22.3 percent. The downsizing companies exhibited a very small average increase in employees in years 1 and 2, with the result that by the end of year 2 their average employment level was still 11.8 percent below its level at the end of the year prior to downsizing. The upsizing companies not only exhibited large increases in employment in the event year, but also tended to continue

to add employees in years 1 and 2. For the sample as a whole (all seven categories combined), the average number of employees increased by 5.49 percent in the event year.

It is apparent from Table 1 that the largest changes in employment, both up or down, occurred in conjunction with major asset restructuring. Among the downsizers, the greatest declines in employment occurred among companies that also disposed of assets (combination and asset downsizers). Similarly, the largest increases in employment occurred among the companies that had substantial additions to their assets (combination and asset upsizers).

Profitability

If the policy of adjusting a company's workforce is successful, it should increase the productivity of employees and reduce costs, resulting in an increase in the profitability of the firm, as measured by the return on assets (ROA). Table 2 summarizes the data on profitability for all categories. In Table 2, the mean ROA for the base year (−1) is shown in data column 1, line 1, for each category, and the means of the *changes* from the base year are shown in data columns 2, 3, and 4. Line 2 for each category shows the industry-adjusted ROA (data column 1) and industry-adjusted change in ROA (data columns 2, 3, and 4). The subscript "a" indicates that the mean is significantly different from that of the stable employers at $p < .05$, and "b" indicates a significant difference from the industry average at $p < .05$. Figure 1 shows the time trend of ROA obtained by adding the successive mean changes in ROA to the base year. Figure 2 shows the industry-adjusted ROA

TABLE 1
Percentage Change in Employment by Employment-Change Category[a]

Employment-Change Category	*n*	Year 0	Year 1	Year 2
Employment downsizers		−11.13	0.41	0.98
	722	(6.96)	(18.44)	(14.67)
Combination downsizers		−18.87	−1.08	1.51
	226	(13.87)	(22.57)	(21.97)
Asset downsizers		−16.67	−0.72	0.42
	88	(13.03)	(24.02)	(18.17)
Stable employers		0.23	2.10	2.26
	2,568	(2.66)	(16.56)	(30.01)
Asset upsizers		22.82	12.47	11.25
	833	(37.65)	(26.78)	(38.29)
Combination upsizers		26.21	12.03	9.84
	755	(36.80)	(37.13)	(21.13)
Employment upsizers		13.51	6.34	5.93
	287	(13.67)	(23.31)	(19.00)

[a] Numbers in parentheses are the standard deviations of the percentage changes.

TABLE 2
Mean Return on Assets in Base Year and Mean Change in Return on Assets from Base Year by Employment-Change Category[a]

Employment-Change Category	Base Year: Year −1	Change from Base Year to Year 0	Year 1	Year 2
Employment downsizers	0.135_a	-0.010_a	-0.011_a	−0.003
Industry-adjusted	0.001	−0.002	0.000	0.003
Combination downsizers	0.121_a	-0.008_a	−0.002	0.005
Industry-adjusted	−0.005	−0.001	0.003	0.004
Asset downsizers	0.108_a	0.006	0.012_a	0.015_a
Industry-adjusted	-0.016_b	0.017_b	0.017_b	0.027_b
Stable employers	0.148	−0.001	−0.003	−0.003
Industry-adjusted	0.012_b	0.001	0.001	0.001
Asset upsizers	0.182_a	-0.009_a	-0.013_a	-0.020_a
Industry-adjusted	0.032_b	-0.009_b	-0.011_b	-0.014_b
Combination upsizers	0.170_a	0.000	0.000	−0.003
Industry-adjusted	0.025_b	−0.001	0.001	0.002
Employment upsizers	0.131_a	0.010_a	0.009_a	0.008_a
Industry-adjusted	0.009	0.010_b	0.004	0.004

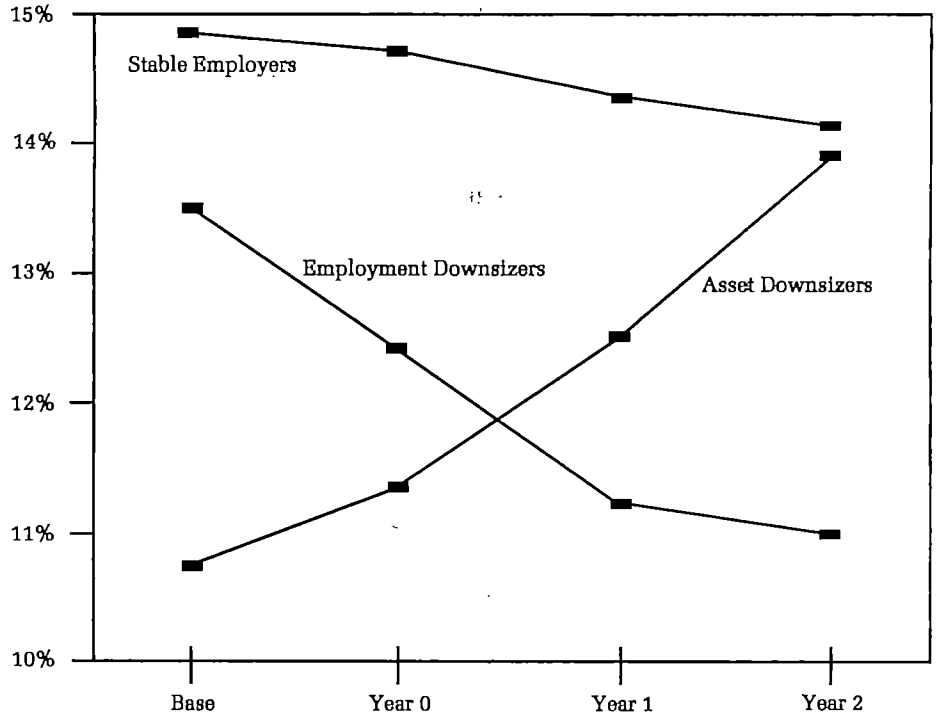
[a] A subscript "a" indicates the mean is significantly different from that for the stable employers at $p < .05$. A subscript "b" indicates a significant difference from 0.0 at $p < .05$.

obtained by adding the successive mean changes in industry-adjusted ROA to the base year. Figure 2 shows that the apparent decline in ROA for the employment downsizers is dampened considerably when the firms in that category are compared with their industries.

The downsizers were, on the average, less profitable in the base year than either the upsizers or stable employers. The downsizers had a (weighted) average return on assets of 12.92 percent, as compared to 16.74 percent for the upsizers in the base year. In addition, the downsizers compared less favorably with their industries in the base year, with an average industry-adjusted return on assets of −0.19 percent; in contrast, the upsizers' average industry-adjusted return was +2.48 percent. The employment downsizers' ROA declined in years 0, 1, and 2. By the end of year 2, the change in ROA for employment downsizers was still slightly lower than that for stable employers, but it was higher (not significantly so) than their industries' change in ROA. By the end of year 2, the asset downsizers showed a statistically significant increase in their profitability, relative to the stable employers, and also relative to their industries.

To test whether there was a systematic relation between profitability and the change in employment, we regressed the change in ROA (from year −1 to year 0) against the employment-change ratio (*REMP*) for both the total sample and for each category, including the asset-change ratio (*RAT*) as an independent variable to account for variations in asset policies. With all

FIGURE 1
Return on Assets for Downsizing Companies

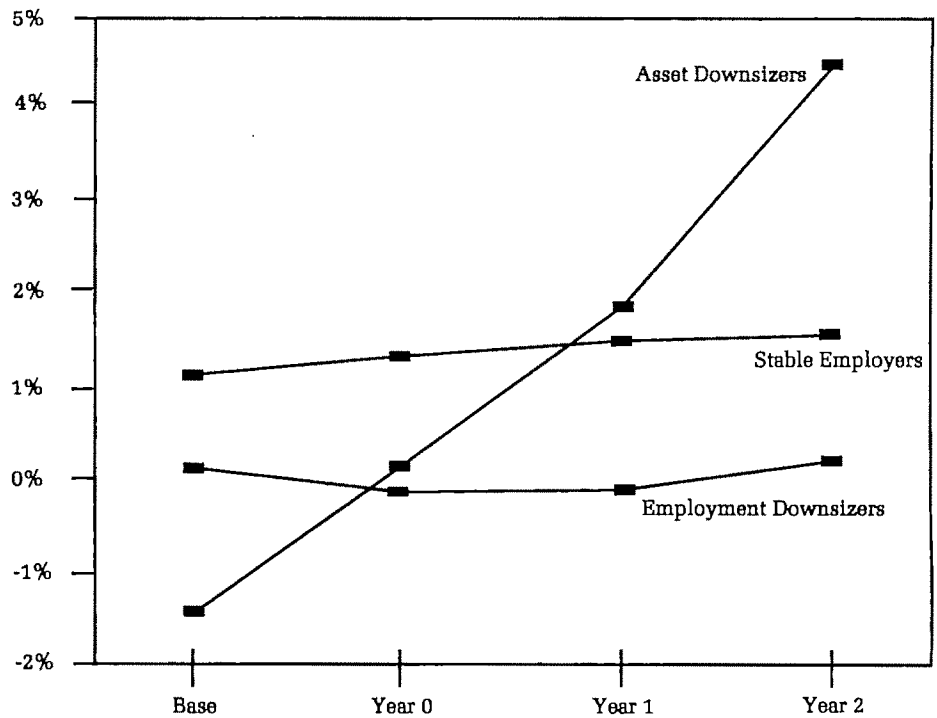


categories combined (the 5,417 occurrences for which we had complete data), there was a significant, positive coefficient for *REMP*. Because *REMP* was increasing with *additions* to employment, a positive coefficient meant that firms with the larger increases (or smaller declines) in employment had the larger increases in return on assets. When we performed regressions for each category separately, the *REMP* coefficient was insignificant for all but the employment downsizers, for whom it was significantly positive. This indicates that for companies in that group, those with the largest layoffs exhibited the largest decreases in ROA. The relationship between the asset-change ratio and ROA was generally negative. The R^2 coefficients for the equations were generally quite small, with values around 2 percent.

Stock Returns

The final judgment as to the effectiveness of a management action is whether it can generate stock returns that are attractive to investors. Table 3 shows the mean annual returns on common stock (dividends plus price appreciation) for each category for each of the years. The second row for each category is the industry-adjusted return (company return less industry return). As in Table 2, significant differences from the stable employers are

FIGURE 2
Industry-Adjusted Return on Assets for Downsizing Companies



indicated by "a," and significant differences from the industry are indicated by "b."

The fifth column of Table 3 is the total compound return that would have been earned by the end of period 2 from an investment at the start of year 0 in a portfolio of companies in each category that earned that annual returns shown for years 0, 1, and 2. For example, for each $1.00 invested in the employment downsizers, the investor would have $1.63 at the end of period 2. For each dollar invested in the employment upsizers, the investor would have $1.74 by the end of period 2. It is clear that investments in the upsizing firms would have generated greater returns. However, although combination upsizers had the highest rate of return, by the end of year 2 their performance was, on the average, poorer than that of their industries.

Note that employment downsizers had a significantly lower mean return than the stable employers in the years of the downsizings (13.71% vs. 18.21%). However, in year 1 the mean return was significantly better than the stable employers', and in both years 1 and 2 the employment downsizers "outperformed" their industries. None of the categories other than the employment downsizers exhibited returns significantly different from their industries' after the event year. Although they were not statistically significant (standard errors were high), the high mean industry-adjusted returns in the

TABLE 3
Mean Annual Return on Common Stock and Mean Industry-Adjusted Return on Common Stock by Employment-Change Category[a]

Employment-Change Category	Annual Return Each Year			Total Return
	Year 0	Year 1	Year 2	
Employment downsizers	0.137_a	0.214_a	0.178	0.626
Industry-adjusted	0.002	0.023	0.035_b	0.061
Combination downsizers	0.131_a	0.261_a	0.167	0.675
Industry-adjusted	−0.096	0.071	0.050	0.016
Asset downsizers	0.185	0.163	0.179	0.624
Industry-adjusted	0.141	0.051	0.068	0.281
Stable employers	0.182	0.192	0.167	0.645
Industry-adjusted	0.000	0.007	0.001	0.008
Asset upsizers	0.267_a	0.234_a	0.186	0.855
Industry-adjusted	−0.003	0.013	−0.034	−0.024
Combination upsizers	0.291_a	0.228_a	0.184	0.877
Industry-adjusted	0.044	−0.101	−0.045	−0.101
Employment upsizers	0.241_a	0.191	0.176	0.738
Industry-adjusted	−0.032	0.041_b	0.017	0.025

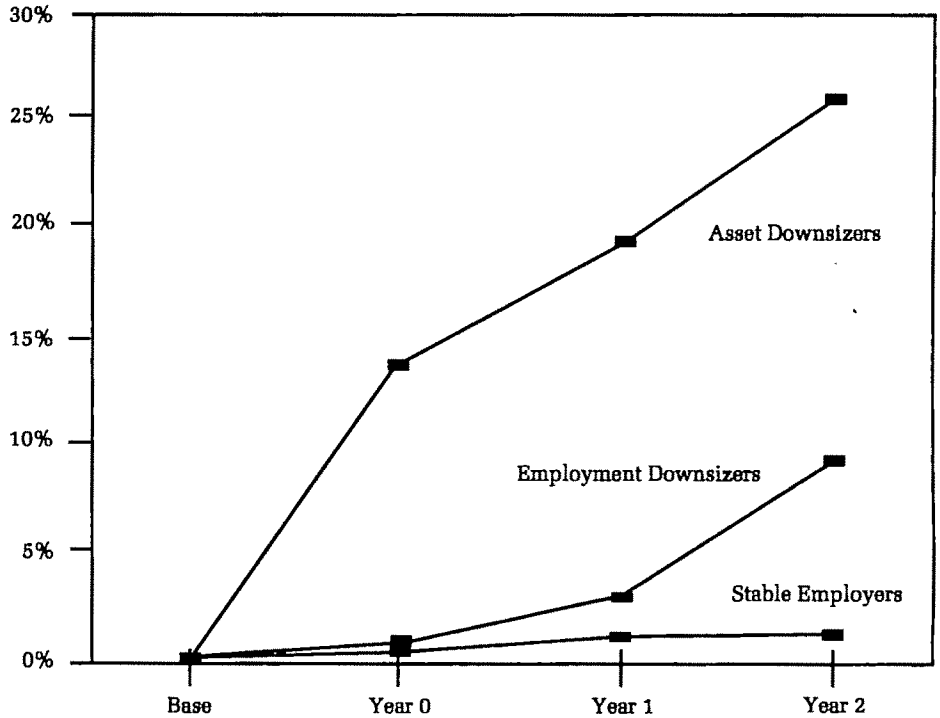
[a] A subscript "a" indicates the mean is significantly different from that for the stable employers at $p < .05$. A subscript "b" indicates a significant difference from 0.0 at $p < .05$.

event year (14.06%) for the asset downsizers are consistent with Worrell and colleagues' finding that employment downsizers that were also restructuring generated high returns after the downsizing announcements (see Figure 3). Figure 3 presents the cumulative, industry-adjusted return from investing in a portfolio of companies in each category, starting at the beginning of the year of downsizing.

We used linear regression analysis to test the relation between stock returns and change in employment (*REMP*), including the change in assets (*RAT*) as a moderating variable. For the whole sample (the 5,417 occurrences for which we had complete data), there was a significantly positive coefficient for *REMP*, indicating that firms with the largest additions (or smallest declines) to employment generated the largest stock returns. There was no significant relation between change in employment and stock returns for any category when the regressions were run within each category.

With respect to Hypothesis 2, stating that changes in employment will not affect a firm's stock returns, the results are mixed. For both the employment downsizers and the combination downsizers, there is sufficient evidence to reject the null hypothesis and state that these downsizers performed better than the stable employers. Furthermore, the employment downsizers outperformed their industries. On the other hand, although the asset downsizers' mean stock returns were very high, they did not differ significantly from the returns of either the stable employers or the asset

FIGURE 3
Cumulative Industry-Adjusted Return on Common Stock from Beginning of Event Year



downsizers' own industries. The regression results also support rejection of the null hypothesis because, for the sample as a whole, firms that had greater increases (or lower declines) in employment generated higher stock returns.

DISCUSSION

In this study, we developed and tested two null hypotheses. Hypothesis 1 states that changes in employment have no effect on profitability (ROA) in the year they occur and in the two succeeding years. The results were mixed. No clear relationship applied to all categories of companies. Neither the employment downsizers nor the combination downsizers exhibited ROA improvements that were significantly better than those of either the stable employers or their industries. However, the asset downsizers outperformed both the stable employers and their industries. We conclude that although some categories of downsizers improved their profitability through downsizing, this effect is not sufficiently consistent across categories to justify rejection of the null hypothesis.

Hypothesis 2 states that changes in employment have no effect on total return on common stock in the year of the changes and in the two succeeding years. The regression results support the rejection of this null hypothesis

because, across all categories, firms that increased employment tended to produce higher returns for their shareholders. At the same time, however, the total returns on the common stock of downsizing companies, as a group, were better than those of their industries, but the returns of upsizing firms as a group were worse than their industries' returns.

The management of every publicly owned firm has an obligation to run it as efficiently as possible. Even if a firm is large and stable, its management should be searching for ways to improve the firm's profitability, including adjusting its workforce. Yet what is striking about the results of the downsizings is their negligible impact on firm profitability relative to the size of the layoffs. The employment downsizers reduced their workforces by an average of 10.5 percent by the end of year 2. They not only failed to increase their returns on assets, but also actually experienced very slight declines in those returns from time −1 to +2. Relative to their industries, the employment downsizers were able to attain an ROA that was only three-tenths of 1 percent above their industry average by the end of year 2. The combination downsizers reduced their workforces by 16.89 percent by the end of year 2, yet they showed profitability results that were little better than the employment downsizers'.

As was noted, we examined stock returns for a longer period (annual returns for three years) and for a much larger sample than Worrell and colleagues (1991) used. The accepted method for event studies is to study a very short period after an event to which financial market investors are expected to react. A long period is not usually used because many other occurrences could affect the stock price and confound the analysis. However, this assumption applies to analysis of the effects of the *announcement* of a given policy on security prices, not to analysis of the longer-run *effects* of the policy. This study analyzed annual changes in employment rather than announcements of changes. Our concern was specifically the longer-run effects of these changes, in part because it is not evident immediately that investors are fully aware of the performance implications of downsizings. The knowledge gained from this type of research adds to that provided by Worrell and colleagues and should help investors to analyze companies engaging in employment downsizings.

What are the implications of this study? Senior managers are under considerable pressure from their stockholders to improve financial performance. Often they try to do this by cutting costs or restructuring assets. Downsizing has been accepted by many managers as a strategy for cutting costs in a manner that is tangible and predictable. Does such cost-cutting translate into higher profits? Our research, done at the firm level rather than at the level of the strategic business unit, has not produced evidence that downsizing firms were generally and significantly able to improve profits. However, there is some evidence that some categories of downsizing firms were able to please their stockholders and to generate stock returns that were superior to those of the average firms in their industries.

Given these mixed results, we conclude that downsizing may not nec-

essarily generate the benefits sought by management. Managers must be very cautious in implementing a strategy that can impose such traumatic costs on employees, both those who leave and those who stay (Cascio, 1993). Managers need to be sure about the sources of future savings and carefully weigh those against all the costs, including the potential increased costs associated with subsequent employment expansions.

Employment downsizing has been an important phenomenon in American business over the last 15 years, yet there is still a great need for additional research about its effects. The results of the present study are based upon publicly available company-level data obtained without any direct contact with the management of the companies studied. Our first suggestion for future research is more in-depth investigation of companies engaged in downsizing to explain more clearly extraneous variables that might have an effect on their performance.

A second question that should be investigated is what factors distinguish successful from unsuccessful downsizers. Third, the main sources of benefits and main costs of downsizing, such as employee sales productivity and changes in production and administrative costs, should be of future interest. A final question is, Who has benefited from downsizing? In some cases stockholders may have earned increased returns. How have their gains compared to the economic, social, and organizational costs of the process?

REFERENCES

Ball, R., & Brown, P. 1968. An empirical evaluation of accounting income numbers. ***Journal of Accounting Research,*** 6: 159–178.

Brockner, J. 1988. The effects of work layoffs on survivors: Research, theory, and practice. In B. M. Staw & L. L. Cummings (Eds.), ***Research in organizational behavior,*** vol. 10: 213–255. Greenwich, CT: JAI Press.

Business Week. 1995. Riding high: Corporate America now has an edge over its global rivals. October 9: 134–146.

Cascio, W. F. 1993. Downsizing: What do we know? What have we learned? ***Academy of Management Executive,*** 7(1): 95–104.

Healy, P., Palepu, K., & Ruback, R., 1992. Does corporate performance improve after mergers? ***Journal of Financial Economics,*** 31: 135–175.

Kaplan, S. 1989. The effects of management buyouts on operating performance and value. ***Journal of Financial Economics,*** 24: 217–254.

Kirkland, R. 1997. America in the world: Still on top, with no challenger. ***Fortune,*** June 9: 86.

Ofek, E. 1994. Efficiency gains in unsuccessful management buyouts. ***Journal of Finance,*** 46: 637–654.

Roth, T. 1995. U.S. is ranked most competitive economy in world. ***Wall Street Journal,*** September 6: A2.

Sloan, A. 1996. The hit men. ***Newsweek,*** February 26: 44.

Standard & Poor's COMPUSTAT user's guide. 1995. Englewood, CO: McGraw-Hill.

Uchitelle, L., & Kleinfield, N. R. 1996. On the battlefield of business, millions of casualties. ***New York Times,*** March 3: 1, 14–16.

Watts, R. 1978. Systematic "abnormal" returns after quarterly earnings announcements. ***Journal of Financial Economics,*** 6: 127–150.

Worrell, D. L., Davidson, W. N., III, & Sharma, V. M. 1991. Layoff announcements and stockholder wealth. ***Academy of Management Journal,*** 34: 662–678.

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THE EFFECT OF ETHICAL FRAMEWORKS ON PERCEPTIONS OF ORGANIZATIONAL JUSTICE

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Research on both ethics and organizational justice distinguishes between process and outcome concerns. However, little research integrates these two areas. This study examined the influence of individuals' ethical frameworks on perceptions of organizational justice. We found that ethical formalists were more sensitive to procedural justice issues and ethical utilitarians were more sensitive to distributive justice issues. The implications of these results for both organizational justice and ethics are discussed.

Organizational justice and normative ethics both address the general organizational question, What is right? Work in the field of organizational justice has centered around how people feel about either the distribution of outcomes (distributive justice) or the process by which these outcome allocation decisions are made (procedural justice). Ethics research has often considered a similar distinction people draw between processes and outcomes as they attempt to determine what is ethical. One such approach distinguishes between utilitarian (outcome-based) decisions and formalist (rules- or process-based) decisions. These similar distinctions between processes and outcomes in organizational justice and ethics are notable, and in this research note we attempt to integrate the two areas.

PROCESS AND OUTCOMES IN JUSTICE RESEARCH

Organizational justice research makes a clear distinction between process and outcome concerns. Early justice research focused on distributive fairness—the perceived fairness of outcome distributions. Research on distributive justice in organizational settings has concentrated primarily on perceptions of equity (Adams, 1965). The most common focus of such research has been individuals' reactions to pay equity and inequity (Mowday,

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1983), although individuals' reactions to equity have been shown to be important for a variety of other variables, including job challenge (Oldham, Nottenburg, Kassner, Ferris, Fedor, & Masters, 1982), job security, supervision (Oldham, Kulik, Ambrose, Stepina, & Brand, 1986), office space (Greenberg, 1988), and layoffs (Brockner, Greenberg, & Brockner, 1986). In general, organizational research on distributive fairness has shown that individuals' perceptions of the fairness of outcomes affect their attitudes and behaviors.

Research on fairness shifted to an emphasis on procedural fairness in the 1980s. Much of this research stemmed from Thibaut and Walker's (1975) finding that, even when individuals received unfavorable outcomes, they evaluated an outcome more positively when they believed the process by which it was determined was fair. Thibaut and Walker demonstrated that input to a decision process (voice) increased individuals' perceptions of the fairness of the process—a finding Lind, Kanfer, and Earley (1990) called the most reliable result in the justice literature.

Research has demonstrated the impact of procedural fairness in a wide variety of organizational settings: performance appraisal (Greenberg, 1986, 1991), drug testing (Konovsky & Cropanzano, 1991), selection testing (Gilliland, 1994), discipline (Trevino, 1992), budget decisions (Bies & Shapiro, 1988), recruiting (Bies, 1985), and layoffs (Brockner, Grover, Reed, & DeWitt, 1992). One consequence of the increased emphasis on procedural justice is that distributive justice has been largely ignored. However, Greenberg (1990, 1993) emphasized the importance of considering procedural and distributive justice issues simultaneously.

Folger (1987) noted that distributive justice and procedural justice are distinct but highly related constructs; the relationship between the two is complex. Justice research has indicated that perceptions of distributive justice and perceptions of procedural justice may affect each other (Lind & Tyler, 1988; Tyler, 1988). Individuals may use outcomes as an indicator of procedural fairness (Lind & Lissak, 1985). Perceptions of procedural justice also may enhance the perceived fairness of the outcomes they produce (Lind & Tyler, 1988). Not only do procedural and distributive justice influence each other; research has also suggested that they interact (e.g., Folger, 1986). For example, procedural justice has a stronger impact when an outcome is unfair, and distributive justice has a stronger impact when a procedure is unfair (see Brockner and Wiesenfeld [1996] for a review). It is clear that both procedural justice and distributive justice contribute to individuals' perceptions of organizational fairness; both affect how individuals react. However, individuals' reactions may differ depending on the extent to which they focus on outcomes, procedures, or both. For example, an individual may receive a promotion she deserves, but may not feel the process allowed her adequate input prior to the decision. If she focuses on the outcome, she is likely to assess the situation as fair. If she focuses on the process, she is likely to assess the situation as unfair.

The finding that individuals distinguish between processes and outcomes when assessing a situation is not unique to the organizational fairness

literature. Research on ethical frameworks has suggested that individuals may differ in the extent to which they consider process or outcomes when making ethical decisions. We suggest that these differences identified in ethics research may manifest themselves in broader settings and may influence individuals' reactions to organizational justice.

PROCESS AND OUTCOMES IN ETHICS RESEARCH

Exploring individual differences in how people deal with moral judgments is a recurring theme in ethics research. A number of taxonomies have emerged, each attempting to delineate the ethical frameworks that underlie ethical judgments (e.g., Brady, 1985; Kohlberg, 1984; Velasquez, 1992). Underlying each of these is a belief that relatively stable individual differences in ethical ideologies affect people's ethical judgments. One approach contrasts process- and outcome-based concerns by distinguishing between formalist and utilitarian approaches to ethical decision making (Brady, 1985, 1990). A formalist approach is process oriented. Under formalism, individuals subscribe to a set of rules or principles for guiding behavior. Actions are ethical or unethical in and of themselves, to the extent that they conform to these rules. Alternatively, a utilitarian approach is outcome oriented. Under utilitarianism, people define ethical actions as those that create the greatest net social good. Actions in and of themselves cannot be identified as ethical; only their outcomes can be so defined.

Formalism (often associated with Kantian ethics) and utilitarianism (often associated with Bentham and Mills) are roughly synonymous with deontology and teleology (Brady, 1990), identified by Kohlberg as "the two major ethical principles" (1984: 579). Nozick stated that "all of substantive ethics has been fitted or poured into these two powerful and appealing molds" (1981: 494). (Of course, many finer-grained categories of ethics exist, including act and rule formalism, act and rule utilitarianism, and so on. However, for this application, we deemed the more global constructs more useful.) Originally, these approaches were considered to be opposite ends of a single continuum; individuals were thought to be either formalist or utilitarian, and stronger tendencies toward one implied weaker tendencies toward the other. However, Brady and Wheeler (1996) found that utilitarianism and formalism were not alternates, but rather, independent subdimensions. An individual can be high on both dimensions, high on one and low on the other, or low on both.

Clearly, a parallel exists between organizational justice and normative ethics. Outcomes are the focus of both distributive justice and utilitarian ethical frameworks. Processes are the focus of both procedural justice and formalist ethical frameworks. This parallel is not surprising, as the fields share common roots and patterns of development. Just as organizational justice research evolved from considering distributive to considering both procedural and distributive issues, research on ethical justice broadened from a focus on distributional issues to include both procedural and distri-

butional concerns; Rawls (1971) initiated this development of the field. Indeed, Thibaut and Walker (1975) empirically examined Rawls's basic premise in their seminal work on procedural justice.

However, both fields have moved away from these common roots. Organizational justice issues have become removed from normative ethics. For example, one sees only infrequent references to Rawls in the current literature. Similarly, in the ethics literature, issues concerning process have faded as distributive issues have again received primary attention (cf. Velasquez, 1992). We believe there are benefits to rejoining the two areas.

AN INTEGRATED MODEL OF ETHICS AND FAIRNESS

We chose to focus on integrating ethics and justice for several reasons. First, the roles of process and outcomes are clearly parallel in ethics and justice. Second, both ethics and justice have strong theoretical foundations on which to build. Third, these theoretical foundations lead researchers to focus on separate, but complementary, aspects of organizational environments. That is, ethics research focuses on individuals and how their beliefs affect perceptions of organizations. Justice research focuses on situations and how attributes of situations affect individuals' perceptions of organizations. We suggest that individuals are disposed to viewing, interpreting, and responding to the world in different ways according to their ethical frameworks, tending to view ethical situations through process (formalist) and outcome (utilitarian) lenses. These ethical frameworks may affect the way that individuals view more general organizational events and outcomes as well, including those involving the fairness of procedures and distribution of outcomes.

The belief that individuals' personal attributes may influence their perceptions of organizational justice is not new. Huseman, Hatfield, and Miles (1987) suggested that individuals may be differentially sensitive to equity. Witt and his colleagues (Joy & Witt, 1992; Witt & Broach, 1993) examined how individual differences such as exchange ideology, delay of gratification, and occupational identification influence individuals' perceptions of procedural fairness. Rasinski (1987) found that individuals' preferences for proportionality or for egalitarianism affected how they weighted procedural and distributive justice in judging the fairness of government policies.

We suggest that individuals' ethical propensities serve as lenses that moderate the relationship between organizational decisions and the perceived fairness of those decisions. Ethical frameworks may affect how individuals attend to, encode, and evaluate information. Just as the research on person-organization fit has suggested that individuals are sensitive to and react to the fit between individual and organizational values (e.g., Meglino, Ravlin, & Adkins, 1989), we suggest that individuals should be most sensitive to those aspects of organizational decisions (processes or outcomes) that match their ethical orientations: formalism, utilitarianism, or both. This moderating effect of ethical framework on the relationship between organ-

izational decisions and their perceived fairness should manifest itself in two ways. The relationship between organizational *procedures* and their perceived fairness should be stronger for strong formalists—those who base their opinions about what is right on rules of action. The relationship between the distribution of organizational *outcomes* and their perceived fairness should be stronger for strong utilitarians—those who base their opinions of what is right on the outcomes of actions. Two hypotheses summarize these moderating effects:

> *Hypothesis 1. The impact of fair procedures on perceptions of procedural fairness will be more pronounced for strong formalists than for weak formalists.*
>
> *Hypothesis 2. The impact of fair outcomes on perceptions of distributive fairness will be more pronounced for strong utilitarians than for weak utilitarians.*

METHODS

Respondents and Procedures

The respondents were from 11 primarily midwestern organizations that included insurance, communications, food-processing, light manufacturing, accounting, and architectural firms, as well as hospital, university, and government organizations. Each organization was contacted through a group associated with the first author's university, the College Board of Advisors, an advisory panel of upper-level managers from 25 local organizations. The sample represents a wide range of for-profit (both goods and services) and not-for-profit entities. Depending on the size of the department or organization, we hand-delivered 25 to 40 survey packets (described below) to each group that had agreed to participate. Each packet contained a postage-paid envelope so the respondent could mail the survey directly back to us, thereby preserving his or her anonymity. A total of 209 responses to 285 distributed surveys (73.3%) were returned. Thirty-five percent of the respondents were men, and 65 percent were women. The average age of respondents was 38.6 years. Supervisors constituted 55 percent of respondents, and nonsupervisors constituted 45 percent. The average length of tenure was 9.1 years with the present employer and 4.4 years at the present job.

In this study, we were interested in four variables that may affect perceptions of organizational justice: ethical formalism, ethical utilitarianism, procedural justice, and distributive justice. The first two were individual difference variables, and the latter two were experimentally manipulated through scenarios that reflected procedurally just or unjust and distributively just or unjust organizational actions. Each survey packet began with instructions and demographic questions (tenure, job category, gender, age) followed by several instruments, presented in random order across respondents: (1) an assessment of individual ethical frameworks, (2) a scenario describing a situation in which an employee was considered for promotion

(in which both procedural and distributive justice were manipulated), followed by an assessment of the respondent's perceptions of the fairness of the process and the outcome, and (3) measures of perceptions of the respondent's own organization, including perceptions of procedural and distributive justice.

Measures

Ethical predispositions. The character traits version of the Measure of Ethical Viewpoints (MEV) measured the extent to which respondents displayed utilitarian or formalist ethical predispositions (Brady & Wheeler, 1996). The instrument lists 20 character traits that respondents rate on a seven-point scale (1 = not important to me, 7 = very important to me) according to their personal judgment. Brady and Wheeler's factor analysis revealed two major factors that accounted for 42.8 percent of the variance in the data. Factor 1, utilitarianism (26.0%), included the traits innovative, resourceful, effective, influential, results-oriented, productive, and a winner; factor 2, formalism (16.7%), included the traits principled, dependable, trustworthy, honest, noted for integrity, and law-abiding. Our confirmatory factor analysis produced similar results, with the two factors accounting for 58.7 percent of the variance, 44.4 percent for factor 1 (utilitarianism) and 14.2 percent for factor 2 (formalism); all traits loaded on the same factor reported by Brady and Wheeler. We calculated each respondent's utilitarian and formalist scores by averaging responses to the appropriate items. (For more information on the instrument's development, see Brady and Wheeler [1996].)

Scenario-based procedural and distributive justice. Procedural and distributive justice were between-subjects manipulations. Our manipulations for each are embedded in four possible scenarios: (1) procedurally just, distributively just (n = 58), (2) procedurally just, distributively unjust (n = 40), (3) procedurally unjust, distributively just (n = 69), and (4) procedurally unjust, distributively unjust (n = 42). Each respondent received one of four scenarios describing an employee (Chris) who is considered for a promotion. As voice has been shown to be a consistent indicator of procedural fairness (Bies & Shapiro, 1988; Greenberg, 1986; Lind, Kanfer, & Early, 1990), in the high procedural justice scenarios, both Chris and a co-worker being considered for the promotion are allowed input into the promotion decision-making process. In the low procedural justice scenarios, the co-worker is allowed input, but Chris is not. We used an equity approach to manipulate the distributive justice of outcomes. In the high distributive justice scenarios, the individual with the better objective performance record is awarded the promotion. In the low distributive justice scenarios, the individual with the better performance record is not awarded the promotion. Pilot tests confirmed that the procedural and distributive justice manipulations were perceived as intended. (Details of pilot tests and their results can be obtained from the authors.)

Following the scenario, respondents were asked a series of questions adapted from Tyler (1990) that registered their reactions to the scenario. Two

items ("How fair was the process by which the decision was made?" and "How fair was the method the supervisor used to make the decision?") assessed perceived procedural fairness, and two items ("How fair was the promotion decision?" and "How fair was Chris' outcome?") measured perceived distributive fairness. Response options were on a seven-point Likert-type scale (1 = not at all, 7 = very). Mean responses created each respondent's perceived procedural justice and perceived distributive justice scores.

Own organization's procedural and distributive justice. The scenario responses allowed us to examine the interaction between ethics and justice perceptions in a controlled setting, where we manipulated conditions to alter perceptions of procedural and distributive justice. However, we were also interested in examining the relationship between justice perceptions and ethics in a real-world setting—one in which perceptions of justice formed naturally. Thus, we also asked the respondents to answer questions assessing their perceptions of procedural and distributive justice in their own organizations. Three items, adapted from Tyler and Schuller (1990), assessed those perceptions (response options: 1 = very, 7 = not at all). Procedural justice was measured by two items: "How fair are the procedures used in your department to make decisions that affect you?" and "How fairly treated are you by your supervisor?" Distributive justice was measured by a single item, "How fair are the outcomes you receive from the organization?"

ANALYSIS AND RESULTS

Initial Tests

Manipulation checks. Table 1 shows means, standard deviations, correlations for each variable, and reliabilities (coefficient alphas) for scales. Since we believed individuals' ethical lenses might affect the manner in which they interpreted organizational events, we included individuals' utilitarianism and formalism scores as covariates in our manipulation checks. Thus, one-way analyses of covariance (ANCOVAs) provided checks of the procedural and distributive justice manipulations in the scenarios.

Mean perceptions of procedural justice for the procedurally just and procedurally unjust scenarios were 4.65 (s.d. = 2.30) and 2.75 (1.47), respectively ($F_{1,\ 200} = 88.87$, $p < .001$). Mean perceptions of distributive justice for the distributively just and unjust scenarios were 4.76 (1.48) and 3.23 (1.47), respectively ($F_{1,\ 199} = 62.21$, $p < .001$). Previous research has indicated a likelihood of spillover effects occurring between manipulations of procedural and distributive justice (cf. McFarlin & Sweeney, 1992; Sweeney & McFarlin, 1993). Similarly, in this study, the distributive justice manipulation affected perceptions of procedural justice ($F_{1,\ 200} = 14.75$, $p < .001$), and the procedural justice manipulation affected perceptions of distributive justice ($F_{1,\ 199} = 32.12$, $p < .001$). However, the effect sizes indicate that the procedural justice manipulation provided a stronger effect for perceptions of procedural justice than did the distributive justice manipulation (f's = .56 and .22, respectively) and that the distributive justice manipulation pro-

TABLE 1
Summary Statistics and Zero-Order Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8
1. Procedural justice manipulation	0.46	0.50								
2. Distributive justice manipulation	0.61	0.48	−.03							
3. Perceived procedural justice	3.62	1.69	.56***	.20**	(.91)					
4. Perceived distributive justice	4.17	1.70	.33***	.45***	.78***	(.90)				
5. Ethical formalism	6.37	0.79	−.07	.05	.03	.06	(.75)			
6. Ethical utilitarianism	5.41	0.84	−.13†	.10	−.08	−.05	.53***	(.85)		
7. Own organization's procedural justice	2.79	1.26	.13†	−.02	.03	.04	−.19**	−.14†	(.79)	
8. Own organization's distributive justice	3.24	1.26	.14†	−.08	.05	.02	−.15†	−.21**	.73***	

[a] Scale reliabilities are in parentheses on the diagonal.
† $p < .10$
** $p < .01$
*** $p < .001$

vided a stronger effect for perceptions of distributive justice than did the procedural justice manipulation (f's = .46 and .33). There was no significant interaction between the procedural and the distributive justice manipulations on either rating of fairness. Additionally, neither utilitarianism nor formalism affected perceived justice ratings.

Demographic effects. A variety of demographic variables have been examined in business ethics research. Three of the most common include age, gender, and organizational hierarchical level. However, their effects have not been consistent (e.g., Gilligan, 1997; Kohlberg, 1984; Rest, 1986). Accordingly, we first tested for the effect of each of these on individuals' ethical framework scores. Analyses revealed that none was significantly related to respondents' ethical scores. Therefore, these variables were not included as control variables in the regression models reported below.

Hypothesis Tests

Scenario analyses. Hypothesis 1 predicts that the relationship between organizational procedures and the perceived fairness of those procedures will be stronger for high-formalism individuals than for low-formalism individuals. The second interaction term (procedural justice by formalism) in the regression results in Table 2 (left side) models that relationship. We also controlled for the scenario's procedural justice manipulation by including it in the regression equation. (Justice manipulations were coded as 1, fair, or 0, unfair.) Finally, since we observed a strong spillover effect between both justice manipulations in our manipulation checks, we included the distributive justice manipulation in the model as well.

Table 2 shows the results of the analysis. As predicted, the interaction of procedural justice and formalism was significant. Figure 1 illustrates this interaction; endpoints represent values one standard deviation above and below the mean. In particular, high-formalism respondents viewed procedurally just organizational actions as especially fair. It should also be noted that utilitarian tendencies did not interact with organizational procedures to affect perceived procedural justice. However, consistent with the spillover effect noted in the manipulation checks, the distributive justice manipulation exerted a significant main effect on perceived procedural justice. Additionally, with the interaction term in the model, the procedural justice manipulation main effect was not significant; the interaction term accounted for variance originally attributed to the main effect manipulation in the manipulation check.

Hypothesis 2 predicts that the relationship between organizational outcomes and the perceived distributive fairness of those outcomes will be stronger for highly utilitarian individuals than for those low on utilitarianism. The first interaction term (distributive justice by formalism) in the regression results in Table 2 (right side) models that relationship. As in the previous model, we included both the distributive and procedural justice manipulations in the model to assess whether the interaction contributed to perceived distributive justice above and beyond the justice manipulations.

TABLE 2
Results of Multiple Regression Analysis of Interaction of Utilitarianism with Distributive Justice[a]

	Perceived Procedural Justice		Perceived Distributive Justice	
Independent Variable	***b***	**β**	***b***	**β**
Procedural justice manipulation	−3.96 (3.25)	−0.59	2.18*** (0.39)	0.32***
Distributive justice manipulation	1.43*** (0.39)	0.21***	3.69 3.13	0.54
Utilitarianism	−0.14 (0.31)	−0.03	−0.23 (0.30)	−0.06
Formalism	−0.15 (0.35)	−0.03	0.42 (0.36)	0.10
Procedural justice × utilitarianism	−0.21 (0.32)	−0.17		
Procedural justice × formalism	1.14** (0.51)	1.32**		
Constant	6.31** (2.03)			
Multiple R	.63			
R^2	.39			
Distibutive justice × utilitarianism			0.27* (0.14)	0.26*
Distributive justice × formalism			0.16 (0.50)	0.15
Constant			3.92† (2.14)	
Multiple R			.59	
R^2			.35	

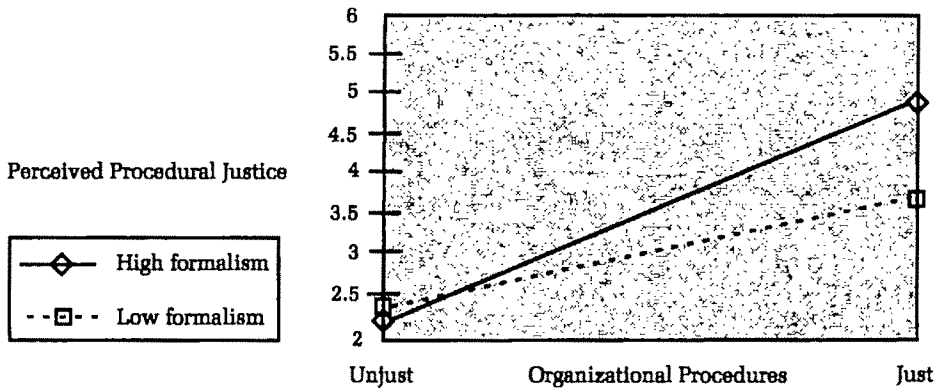
[a] For the unstandardized regression coefficients (b), standard errors are in parentheses.
† $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$

Table 2 shows the results of the analysis. As predicted, the distributive justice-by-utilitarianism interaction was significant. (Figure 2 illustrates this interaction.) In particular, highly utilitarian subjects viewed distributively just organizational actions as especially fair.

Additionally, formalist tendencies did not interact with organizational outcomes to affect the perceived fairness of those outcomes. Again, consistent with the manipulation spillover effects, the procedural justice manipulation exerted a significant main effect on perceived distributive justice. Also, with the interaction term in the model, the distributive justice manipulation main effect was not significant; the interaction term again accounted for variance originally attributed to the main effect manipulation in the manipulation check.

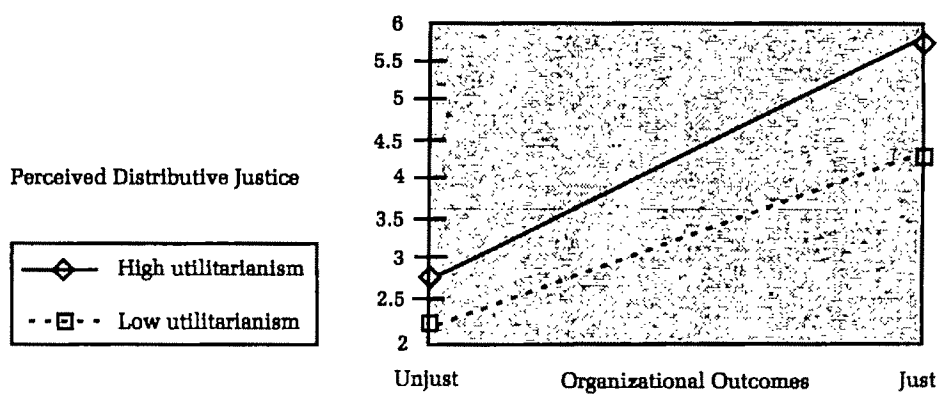
Own-organization analyses. The scenario study allowed us to examine the relationship between ethics and justice in a controlled setting, where we

FIGURE 1
Interaction between Procedural Justice and Ethical Formalism



were able to manipulate organizational decisions (processes and outcomes). However, one might question the generalizability of scenarios to individuals' actual organizational experiences. Thus, we conducted a final set of analyses to explore whether formalism or utilitarianism was related to respondents' fairness perceptions in their own organizations. Of course, in these settings we were not able to control the organizational decisions (process or outcomes) that should largely dictate employees' perceptions of procedural and distributive fairness. Therefore, we could not examine how ethics *moderated* the relationship between organizational decisions and the perceived fairness of those decisions. However, we could assess whether these ethical tendencies were related to fairness perceptions in a real-world setting. We expected that formalism would be related to perceptions of procedural justice and that utilitarianism would be related to perceptions of

FIGURE 2
Interaction between Distributive Justice and Ethical Utilitarianism



distributive justice, but since these analyses were exploratory, we did not make predictions about the direction of the relationships.

Table 3 shows the results of our exploratory analysis of individuals' fairness perceptions in their own organizations. As we speculated, utilitarianism was related to perceived distributive justice in own-organization evaluations. There was no significant relationship between formalism and perceived distributive justice. Formalism was marginally related to perceived procedural justice in own-organization evaluations. Similarly, there was no significant relationship between utilitarianism and perceived procedural justice.

DISCUSSION AND CONCLUSIONS

Research on organizational justice and research on ethics evidence parallel interests in process and outcome issues. Our study is a first attempt to look at how these areas might be integrated. The results suggest that ethical frameworks are important individual difference variables for understanding individuals' reactions to organizational actions and individuals' subsequent justice perceptions. Ethical frameworks served as lenses through which individuals viewed organizational decisions and influenced how they reacted to those decisions. Individuals' formalist tendencies moderated the relationship between organizational procedures and individuals' perceptions of procedural fairness. As predicted, highly formalist individuals were more sensitive to procedural justice than were those low on formalism. Utilitarianism had no significant effect on perceptions of procedural justice. Also as predicted, highly utilitarian individuals were more sensitive to distributive

TABLE 3
Results of Multiple Regression Analysis for Main Effects of Utilitarianism and Formalism on Distributive and Procedural Justice[a]

	Own Organization's Procedural Justice		Own Organization's Distributive Justice	
Independent Variable	***b***	**β**	***b***	**β**
Formalism	−0.13†	−0.16†	−0.04	−0.05
	(0.07)		(0.07)	
Utilitarianism	−0.03	−0.05	−0.14*	−0.19*
	(0.07)		(0.07)	
Constant	1.68***		2.62***	
	(0.83)		(0.43)	
Multiple *R*	.19		.22	
R^2	.04		.05	

[a] For the unstandardized regression coefficients (*b*), standard errors are in parentheses.

† $p < .10$

* $p < .05$

*** $p < .001$

justice than were those low on utilitarianism. Formalism had no significant effect on perceptions of distributive justice.

These results suggest that individuals' ethical frameworks are important to a range of organizational phenomena broader than that in which they are usually examined. Typically, organizational research on ethical frameworks has focused on individuals facing specific, personal, ethical issues. Little attention has been given to how this individual-level construct affects other individual and organizational interactions. Our results suggest that individuals' ethical frameworks also affect how they perceive and react to organizational events. Thus, ethical frameworks are not just relevant to individual decision making. Rather, they color how individuals view the world and their subsequent reactions to that view.

It is important to note that we do not yet understand the cognitive processes by which ethical frameworks affect justice judgments. Perhaps ethical frameworks affect what individuals attend to in their environment. Formalists may notice procedural aspects; utilitarians may notice outcomes. Alternatively, ethical frameworks may influence how individuals interpret or encode information. For example, utilitarians may believe distributions based on equity are more fair. A third possibility is that ethical frameworks affect how people weight information in forming an evaluation. Formalists and others may notice and interpret information the same way, but strong formalists may give more weight to fairness aspects of a procedure than other individuals. Finally, ethical frameworks may influence any or all of these three processes.

Alternatively, the effects of ethical frameworks may not result from active information processing, but may instead be a cognitive shortcut for fairness judgments. Just as the fairness heuristic (Tyler & Lind, 1992) suggests individuals use judgments of procedures and outcomes to generate a global impression of the fairness and legitimacy of authorities, ethical frameworks may function as a heuristic for these preliminary fairness judgments. Our study does not allow us to determine how ethical frameworks affect fairness judgments, but assessing the cognitive processes that underlie these differences is potentially a rich area for future research.

The results of this study have implications for justice research as well. Traditionally, justice researchers have focused on either distributive or procedural justice, but clearly, both are important (Greenberg, 1990, 1993). However, our results suggest they may be differentially important for different individuals, and recognizing these differences has some practical implications. For example, a strongly formalist, weakly utilitarian supervisor may be most concerned about the process by which he makes decisions. A strongly utilitarian, weakly formalist subordinate may not notice this effort at procedural fairness. Thus, a gap may exist between the supervisor's beliefs about the fairness of his actions and the subordinate's fairness perceptions. These results suggest that to understand how individuals perceive and react to organizational decisions, researchers need to know what aspects of the decision they consider important. Congruence between the ethical ap-

proaches of supervisors and subordinates could lead to increased perceptions of fairness, just as congruence between work values affects other organizationally important phenomena like satisfaction and commitment (cf. Meglino et al., 1989).

Finally, our results indicate a relationship between individuals' ethical frameworks and perceptions of fairness in their own organizations. It is interesting to note that the signs of both relationships (Table 3) were negative. That is, formalists reported less procedural fairness and utilitarians reported less distributive fairness. We can only speculate about the reasons for these negative relationships. However, our data show that the mean ratings for procedural and distributive justice perceptions were well below the "neutral" point (4.0) on our 7-point scale ($\bar{x}$'s = 2.79 and 3.24, respectively). Individuals tended to see their own organizations as unfair. Thus, it may be that ethical frameworks accentuate these perceptions. If general perceptions of procedural fairness are low, they should be especially low for strong formalists, and if general perceptions of distributive fairness are low, they should be especially low for strong utilitarians. Alternatively, it may be that strong formalists and utilitarians are more aware of or sensitive to unfair processes and outcomes. Thus, they may simply perceive their worlds to be less fair places than other people see theirs as being. Since this sample reflected relatively high levels of both formalism and utilitarianism (6.37 and 5.41, respectively, on a 7-point scale), those higher ethical scores may result in lower perceptions of procedural and distributive fairness. Further research is needed to address this issue.

Our results also suggest other possibilities for future research efforts. For example, this study relied on simple conceptualizations of both ethics and justice. To examine individuals' ethical frameworks, we used Brady's (1990) two-dimensional taxonomy of ethical predispositions. Its parsimony and intuitively appealing fit with procedural and distributive justice were both positive features. However, ethics is a multidimensional construct, and future researchers should consider more complex taxonomies of ethical decision making when exploring the more complex relationships between ethics and justice. Perhaps the most promising extension would address approaches to ethical reasoning based on stages of moral development (e.g., Kohlberg, 1984; Rest, 1986). For example, there is some evidence that moral development is related to perceptions of equity, a foundation of the organizational fairness literature (Vecchio, 1981). Moral development approaches may provide a platform from which to explore other justice-related issues.

In this study, we also used a simple approach to examining justice. Recent research on procedural justice distinguishes between the attributes of a procedure and the interpersonal treatment an individual receives when the procedure is implemented (Bies & Moag, 1986). This area has been called interactional justice, and its relationship to ethical frameworks deserves attention. Originally posited as a new form of justice (Bies & Moag, 1986), interactional justice has more recently been considered to be a social aspect

of procedural justice (Brockner & Wiesenfeld, 1996). Thus, we might expect interactional justice to interact with formalism. However, Greenberg (1993) noted that there are both procedural and distributive aspects to interactional justice. Therefore, the relationship between interactional justice and ethics may depend on the specific aspect of interactional justice affected. These relationships warrant further investigation.

Finally, potential weaknesses of this research should be noted. First is the general issue of measuring ethics and ethical tendencies. The MEV is a new measure. New measures and new approaches must be interpreted cautiously until a sufficient psychometric record can be established. Second, this study employed scenarios. Scenarios may approximate real-life judgment-making situations more closely than simple questionnaire or survey methods (Alexander & Becker, 1978) and are especially appropriate for situations examining experienced respondents (Lind & Tyler, 1988), but they are not real life. That relationships between ethics and justice perceptions emerged in both scenario and own-organization results increases our confidence that ethics and justice are related. Still, we must generalize cautiously.

In all, this research represents a first attempt to integrate two important issues for organizations: ethics and fairness. Both of these represent critical lines of inquiry for organizational researchers. This study expands the ethics literature by suggesting that formalism and utilitarianism may reflect a propensity for people to view more than just ethical dilemmas in process or outcome terms; formalism and utilitarianism may serve as lenses for assessing daily organizational decisions as well. The study extends the justice research by examining how individuals may differ in sensitivity to procedural and distributive justice issues. We see this as a first step in understanding the relationship between individuals' ethics, their perceptions of organizational justice, and the impact of both on attitudinal and behavioral reactions.

REFERENCES

Adams, J. S. 1965. Inequity in social exchange. In L. Berkowitz (Ed.), ***Advances in experimental social psychology,*** vol. 2: 267–299. New York: Academic Press.

Alexander, C. S., & Becker, H. J. 1978. The use of vignettes in survey research. ***Public Opinion Quarterly,*** 42: 93–104.

Bies, R. 1985. ***Identifying principles of interactional justice: The case of corporate recruiting.*** Paper presented as part of the symposium "Moving beyond equity theory: New directions in research on justice in organizations," at the annual meeting of the Academy of Management, Chicago.

Bies, R. J., & Moag, J. S. 1986. Interactional justice: Communication criteria of fairness. In R. J. Lewicki, B. H. Sheppard, & B. H. Bazerman (Eds.), ***Research on negotiation in organizations,*** vol. 1: 43–55. Greenwich, CT: JAI Press.

Bies, R. J., & Shapiro, D. L. 1988. Voice and justification: The influence on procedural fairness judgments. ***Academy of Management Journal,*** 31: 676–685.

Brady, F. N. 1985. A Janus-headed model of ethical theory: Looking two ways at business/society issues. ***Academy of Management Review,*** 10: 568–576.

Brady, F. N. 1990. ***Ethical managing: Rules and results.*** New York: Macmillan.

Brady, F. N., & Wheeler, G. E. 1996. An empirical study of ethical predispositions. ***Journal of Business Ethics,*** 15: 927–940.

Brockner, J., Greenberg, J., & Brockner, A. 1986. Layoffs, equity theory, and work performance: Further evidence of the impact of survivor guilt. ***Academy of Management Journal,*** 29: 373–384.

Brockner, J., Grover, S., Reed, T., & DeWitt, R. L. 1992. Layoffs, job insecurity, and survivors' work effort: Evidence of an inverted-U relationship. ***Academy of Management Journal,*** 35: 413–425.

Brockner, J., & Wiesenfeld, B. M. 1996. An integrative framework for explaining reactions to decisions: The interactive effects of outcomes and procedures. ***Psychological Bulletin,*** 120: 189–208.

Folger, R. 1986. Rethinking equity theory: A referent cognitions model. In H. W. Bierhoff, R. L. Cohen, & J. Greenberg (Eds.), ***Justice in social relations:*** 145–162. New York: Plenum.

Folger, R. 1987. Distributive and procedural justice in the workplace. ***Social Justice Research,*** 1: 143–159.

Gilligan, C. 1977. In a different voice: Women's conceptions of self and of morality. ***Harvard Educational Review,*** 47: 481–516.

Gilliland, S. W. 1994. Effects of procedural and distributive justice on reactions to a selection system. ***Journal of Applied Psychology,*** 79: 691–701.

Greenberg, J. 1986. Determinants of perceived fairness of performance evaluations. ***Journal of Applied Psychology,*** 71: 340–342.

Greenberg, J. 1988. Equity and workplace status: A field experiment. ***Journal of Applied Psychology,*** 73: 606–613.

Greenberg, J. 1990. Organizational justice: Yesterday, today, and tomorrow. ***Journal of Management,*** 16: 399–432.

Greenberg, J. 1991. Using explanations to manage impressions of performance appraisal fairness. ***Employee Responsibilities and Rights Journal,*** 4: 51–60.

Greenberg, J. 1993. The social side of fairness: Interpersonal and informational classes of organizational justice. In R. Cropanzano (Ed.), ***Justice in the workplace: Approaching fairness in human resource management:*** 79–103. Hillsdale, NJ: Erlbaum.

Huseman, R. C., Hatfield, J. D., & Miles, E. W. 1987. A new perspective on equity theory: The equity sensitivity construct. ***Academy of Management Review,*** 12: 222–234.

Joy, V. L., & Witt, L. A. 1992. Delay of gratification as a moderator of the procedural justice and distributive justice relationship. ***Group and Organization Management,*** 17: 297–308.

Kohlberg, L. 1984. ***The psychology of moral development.*** San Francisco: Harper & Row.

Konovsky, M., & Cropanzano, R. 1991. The perceived fairness of employee drug testing as a predictor of employee attitudes and job performance. ***Journal of Applied Psychology,*** 76: 698–707.

Lind, E. A., Kanfer, R., & Early, P. 1990. Voice, control, and procedural justice: Instrumental and non-instrumental concerns in fairness judgments. ***Journal of Personality and Social Psychology,*** 59: 952–959.

Lind, E. A., & Lissak, R. I. 1985. Apparent impropriety and procedural fairness judgments. ***Journal of Experimental Social Psychology,*** 21: 19–29.

Lind, E. A., & Tyler, T. R. 1988. ***The social psychology of procedural justice.*** New York: Plenum.

McFarlin, D. B., & Sweeney, P. D. 1992. Distributive and procedural justice as predictors of satisfaction with personal and organizational outcomes. ***Academy of Management Journal,*** 35: 626–637.

Meglino, B. M., Ravlin, E. C., & Adkins, C. L. 1989. A work values approach to corporate culture: A field test of the value congruence process and its relationship to individual outcomes. ***Journal of Applied Psychology,*** 74: 424–432.

Mowday, R. T. 1983. Equity theory predictions of behavior in organizations. In R. Steers & L. Porter (Eds.), ***Motivation and work behavior*** (3d ed.): 91–113. New York: McGraw-Hill.

Nozick, R. 1981. ***Philosophical explanations.*** Cambridge, MA: Harvard University Press.

Oldham, G. R., Kulik, C. T., Ambrose, M. L., Stepina, L. P., & Brand, J. F. 1986. Relations between job fact comparisons and employee reactions. ***Organizational Behavior and Human Decision Processes,*** 38: 28–47.

Oldham, G. R., Nottenburg, G., Kassner, M. K., Ferris, G., Fedor, D., & Masters, M. 1982. The selection and consequences of job comparisons. ***Organizational Behavior and Human Performance,*** 29: 84–111.

Rasinski, K. A. 1987. What is fair is fair—Or is it? Value differences underlying public views about social justice. ***Journal of Personality and Social Psychology,*** 53: 201–211

Rawls, J. 1971. ***A theory of justice.*** Cambridge: Harvard University Press.

Rest, J. R. 1986. ***Moral development: Advances in theory and research.*** New York: Praeger.

Sweeney, P. D., & McFarlin, D. B. 1993. Workers' evaluations of the "ends" and the "means": An examination of four models of distributive and procedural justice. ***Organizational Behavior and Human Decision Processes,*** 55: 23–40.

Thibaut, J., & Walker, L. 1975. ***Procedural justice: A psychological analysis.*** Hillsdale, NJ: Erlbaum.

Trevino, L. K. 1992. The social effects of punishment in organizations: A justice perspective. ***Academy of Management Review,*** 17: 647–676.

Tyler, T. 1990. ***Why people obey the law: Procedural justice, legitimacy, and compliance.*** New Haven, CT: Yale University Press.

Tyler, T. 1988. What is procedural justice? ***Law and Society Review,*** 22: 301–335.

Tyler, T. R., & Lind, E. A. 1992. A relational model of authority in groups. In M. Zanna (Ed.), ***Advances in experimental social psychology,*** 25: 115–192. New York: Academic Press.

Tyler, T. R., & Schuller, R. 1990. ***A relational model of authority in work organizations: The psychology of procedural justice.*** Unpublished manuscript, American Bar Foundation, Chicago.

Vecchio, R. P. 1981. An individual-differences interpretation of the conflicting predictions generated by equity theory and expectancy theory. ***Journal of Applied Psychology,*** 66: 470–481.

Velasquez, M. G. 1992. ***Business ethics: Concepts and cases.*** Englewood Cliffs, NJ: Prentice-Hall.

Witt, L. A., & Broach, D. 1993. Exchange ideology as a moderator of the procedural justice-satisfaction relationship. ***Journal of Social Psychology,*** 133: 97–103.

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INTEGRATING JUSTICE CONSTRUCTS INTO THE TURNOVER PROCESS: A TEST OF A REFERENT COGNITIONS MODEL

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In the model tested, we posit that employees' outcome and supervisor satisfaction result from referent outcomes, justifications, and the likelihood of amelioration. These satisfaction facets are then related to turnover through withdrawal cognitions. Structural equation modeling was used to assess the fit of this model and alternatives. Although the original model had a good fit, a competing model provided a better one, with most hypothesized relationships supported. The implications of accepting the alternative model over the original are discussed.

It has been suggested that turnover research is in a "fallow period" and in need of rejuvenation (O'Reilly, 1991). Indeed, several reviews and commentaries have indicated that most researchers have sought either to address methodological issues or to empirically validate existing theories of withdrawal that focus on affect-induced quitting (Lee & Mitchell, 1994; O'Reilly, 1991). For these reasons, the turnover literature would benefit greatly from the introduction of alternative theoretical perspectives that take into account contextual variables surrounding the occurrence of quitting (Lee, 1996).

The present study offers such a perspective. We developed and tested a model clarifying the psychological processes by which felt deprivation instigates quitting. The model draws upon referent cognitions theory (RCT; Cropanzano & Folger, 1989; Folger, 1987; Folger, Rosenfield, & Rheaume, 1983; Folger, Rosenfield, & Robinson, 1983) to explain voluntary turnover,

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an employee's voluntary withdrawal from an organization. Extant turnover research has not applied the full referent cognitions theory model. In contrast, we draw from that theory to provide a comprehensive theoretical account of how justice perceptions prompt employee withdrawal, thus uniting two research streams that have seldom been combined.

The foundation for our study is in part prior research examining relationships between outcome fairness and intentions to quit (turnover intentions; Konovsky & Cropanzano, 1991). But this study is one of the few, to our knowledge, that directly examine the relationship between justice perceptions and actual quitting. The proposed model integrates referent cognitions theory with the turnover literature by including predicted relationships among outcome and supervisor satisfaction, withdrawal cognitions, and actual turnover.

THEORETICAL BACKGROUND

Organizational Justice and Turnover

The concept of distributive justice is commonly invoked to explain the conditions under which people become dissatisfied with outcomes (Adams, 1965; Walster, Walster, & Berscheid, 1978). According to current theories, fairness judgments are made when people compare what they have received—their outcomes—with those of a referent other (Martin, 1981). This comparison process underlies relative deprivation, or the feeling of discontent arising from a belief that one is getting less than one deserves relative to a comparison other (Crosby, 1984; Martin, 1981). Felt deprivation produces a range of psychological and behavioral effects in organizations, including dissatisfaction, stress, and absenteeism (Martin, 1981). Despite the far-reaching significance of felt deprivation, surprisingly little research has examined how it relates to turnover.

In general, turnover theorists have conceived "rudimentary" notions of equity (cf. Mobley, 1977) by assuming that distributive injustice in rewards underlies dissatisfaction and, ultimately, organizational exits. More recently, scholars have recognized that unfair procedures (Greenberg, 1987; Lind & Tyler, 1988; Thibaut & Walker, 1975) can also stimulate exits (Dittrich & Carrell, 1979; Price & Mueller, 1986).

Although acknowledging procedural fairness (Hom & Griffeth, 1995; Konovsky & Cropanzano, 1991; Price & Mueller, 1986), turnover perspectives remain relatively simplistic and incomplete in light of contemporary theoretical developments in the justice literature. For example, in present-day turnover models, only undifferentiated effects of procedural justice on job attitudes are envisioned (cf. Hom & Griffeth, 1995; Price & Mueller, 1986), and other essential bases of workplace fairness, like the interpersonal context surrounding the enactment of rules for awarding rewards, are neglected (Greenberg, 1990; Tyler & Bies, 1990). Known as interactional justice (Bies & Moag, 1986), this construct represents a person's evaluation of the

truthfulness, impartiality, and respect an authority has shown to him or her. One advantage of referent cognitions theory over previous formulations is that it accounts for how different types of justice perceptions might relate to turnover.

Referent Cognitions Theory

Referent cognitions theory introduces the evaluation of procedures into a relative deprivation framework and more completely describes how injustice prompts dissatisfaction. It extends traditional turnover models that implicate outcome or procedural unfairness as undermining morale and retention (cf. Hom & Griffeth, 1995; Hulin, Rosnowski, & Hachiya, 1985; Price & Mueller, 1986) by elaborating the psychological processes that generate dissatisfaction. Specifically, referent cognitions theory explains how dissatisfaction arises when a person compares existing reality to a more favorable alternative.

According to the theory, people perform three mental simulations involving referent cognitions, justifications, and the likelihood of amelioration. Referent cognitions are alternative, imaginable circumstances that differ from a person's actual circumstances. People are most likely to be dissatisfied when imagined results are more attractive than existing reality. They become aware of alternatives by discovering that others are receiving rewards different from their own. As referent outcomes are compared to existing outcomes, people think about "what might have been."

Just as referent outcomes are compared to existing outcomes, so too are the procedures that produced those outcomes. The critical question underlying such comparisons is the extent to which referent procedures are more justifiable than those that produced existing outcomes. If actual procedures are judged to be morally inferior to referent procedures, then there will be low justification for existing outcomes. Conversely, superior existing procedures will be associated with high justification. If the rationale for an existing procedure is judged less appropriate or convincing than that for the referent procedure, dissatisfaction results. When the rationale is considered appropriate, convincing, and hence justifiable, dissatisfaction with present outcomes can diminish (Greenberg, 1987; Folger & Martin, 1986; Folger, Rosenfield, & Robinson, 1983).

A third tenet of referent cognitions theory is that people may view existing outcomes as temporary because satisfaction may be influenced by what they expect to receive in the future. Mental simulations involving future states are presented in the model as beliefs regarding the likelihood of amelioration. Likelihood of amelioration occurs because, when people expect outcomes to improve, they are less dissatisfied than when they see little chance for improvement in their circumstances (Folger, Rosenfield, Rheaume, & Martin, 1983). That likelihood of amelioration will be related to dissatisfaction parallels Martin's (1981) argument that people's responses to felt deprivation are influenced by their beliefs about whether their organ-

izations are amenable to change. If they believe that the organizations can change, then inferior outcomes may not necessarily produce dissatisfaction. Instead, they may motivate constructive attempts at improvement (Martin, 1981). But if employees do not hold this belief, poor outcomes can produce negative responses directed inward, such as stress and depression, or negative responses directed outward—absenteeism, poor performance, and resignations.

Thus far, we have used referent cognitions theory to explain how comparisons between existing and imagined outcomes and procedures, as well as the likelihood of amelioration, are related to dissatisfaction and turnover. To pursue this argument and lay the groundwork for hypothesized mediated relationships between referent cognitions constructs and turnover, we next consider how employee dissatisfaction with work outcomes and supervisors increases actual resignations.

Outcome and Supervisor Satisfaction as Predictors of Turnover

We theorize that perceptions of distributive and procedural justice affect employees' satisfaction with both outcomes and supervisors. Although several studies have examined the relationship between justice perceptions and facets of job satisfaction (e.g., Alexander & Ruderman, 1987; McFarlin & Sweeney, 1992), few have investigated how the processes underlying relative deprivation culminate in turnover (cf. Hom & Griffeth, 1995). This study thus contributes to the turnover literature by integrating referent cognitions theory and withdrawal by empirically verifying those links. Using the theory as a framework, our model, presented in Figure 1a, shows how outcome and supervisor satisfaction mediate referent cognitions theory constructs and turnover.

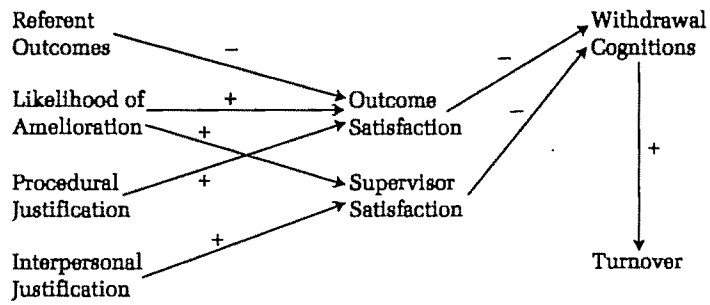
Our model specifies that referent cognitions, justification, and the likelihood of amelioration influence outcome and supervisor satisfaction. These facets of job satisfaction have been documented as turnover determinations (Hom & Griffeth, 1995). Indeed, several leading perspectives on withdrawal have implicated reward satisfaction (e.g., Rusbult & Farrell, 1983) and leadership treatment (e.g., Graen & Ginsburgh, 1977; Graen, Liden, & Hoel, 1982) as bases of retention. Our model further interposes withdrawal cognitions between satisfaction facets and turnover. The sequence is consistent with findings of recent literature reviews (Hom & Griffeth, 1995; Tett & Meyer, 1993) showing that withdrawal cognitions, a combination of quitting intentions and cognitions, is the most immediate precursor to turnover. Thus, low job satisfaction should increase resignations by stimulating withdrawal cognitions.

We predict that referent outcomes will affect outcome satisfaction but not supervisor satisfaction. The effect is such that high referent cognitions will decrease outcome satisfaction. This prediction is based on the argument that referent cognitions underlie judgments of distributive rather than procedural fairness (Folger & Konovsky, 1989; Konovsky, Folger, & Cropanzano,

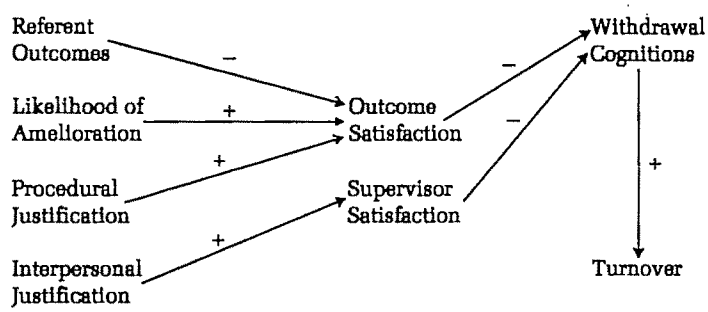
FIGURE 1

Hypothesized Referent Cognitions Models of Employee Turnover

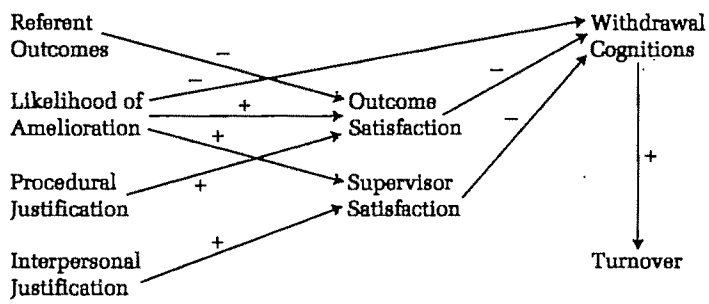
(1a) Theoretical Model



(1b) More Constrained Alternative Model



(1c) Less Constrained Alternative Model



1987). Consequently, they should more strongly predict satisfaction with tangible outcomes like pay or promotions than interpersonal outcomes like satisfactory treatment by a supervisor. After all, superiors are not entirely responsible for their subordinates' pay and promotional opportunities,

which frequently depend on decisions about internal and external job worth and the availability of positions outside the work unit.

With regard to the justification construct, our model distinguishes between two components of procedural justice. One component represents the structural characteristics of formal procedures; the second is based on the treatment a person receives from an authority, like a supervisor. We hypothesize that a favorable evaluation of formal procedures will promote satisfaction with outcomes but not satisfaction with a supervisor. Alternatively, favorable justifications provided by interpersonal treatment will foster supervisor satisfaction, but not outcome satisfaction.

Our hypothesis relating procedural justification to outcome satisfaction is supported by research showing that fair procedures can minimize the dissatisfaction resulting from poor outcomes (Folger, Rosenfield, Grove, & Corkran, 1979; Greenberg & Folger, 1983). The hypothesis relating interpersonal justification to supervisor satisfaction is consistent with Bies and Shapiro's (1987) argument that judgments of interpersonal fairness more strongly affect a person's evaluation of a decision maker or authority than the person's evaluation of a particular job outcome. The more favorable the evaluation, the more satisfied the person will be with that authority.

Lastly, our model depicts likelihood of amelioration as increasing both outcome and supervisor satisfaction. This prediction is based on the work of several writers (e.g., Crosby, 1984; Homans, 1974) who have contended that fairness perceptions depend on both the evaluation of present outcomes and the expectation of future outcomes. For example, a study by Bernstein and Crosby (1980) found that feelings of deprivation increased as the perceived feasibility of obtaining a desired outcome decreased.

Our proposition, that future outcome expectations promote satisfaction with current job outcomes and with superiors who may authorize such improvements, extends prevailing thinking about relative deprivation (cf. Davies, 1969; Gurr, 1970). This reasoning conforms to Mobley, Griffeth, Hand, and Meglino's (1979) view that expected future attainment of superior work circumstances can bond an employee to an employer, even though present conditions are deficient. Hence, when employees expect the quality of work-related outcomes to improve, they become less distraught over their present circumstances. In sum, we posited the following relationships among constructs:

> *Hypothesis 1. High referent outcomes are negatively associated with outcome satisfaction but are not related to supervisor satisfaction.*
>
> *Hypothesis 2. Procedural justification is positively associated with outcome satisfaction but is not related to satisfaction with a supervisor. Interpersonal justification is positively associated with satisfaction with a supervisor but is not related to outcome satisfaction.*

Hypothesis 3. Likelihood of amelioration is positively associated with both outcome and supervisor satisfaction.

Hypothesis 4. Both outcome and supervisor satisfaction are negatively related to withdrawal cognitions.

Hypothesis 5. Withdrawal cognitions is positively related to turnover.

We used structural equation modeling to assess how well our conceptual integration of referent cognitions theory constructs with the turnover process accounted for data. Structural equation modeling techniques allow simultaneous tests of theoretical propositions about relationships among multiple variables in a complex model (Bentler, 1990). In addition, a researcher can compare the explanatory power of a model to that of competing models using an array of adequacy indices. One limitation is that structural equation modeling cannot firmly establish that a model supported by data is in fact the "true" model because several models may fit the data equally well. Hence, the correct model cannot be identified on purely statistical grounds (MacCallum, Wegener, Uchino, & Leandre, 1993). Nonetheless, the researcher can reduce uncertainty about a plausible model by testing a priori competing models, comparing their meaningfulness, parsimony, and ability to account for the data. Eliminating competing rivals strengthens support for a model. Anderson and Gerbing (1988) outlined a procedure for testing alternative models using sequential chi-square difference tests. We used nested model comparisons to compare the relative fit of competing models positing different structural networks than the original.

Alternative Models

We identified and tested two rival models. One was a more constrained version of the original model. Operationally, this meant one pathway was deleted from the original model. The other was a less constrained version, meaning a new pathway was added to the original formulation. In the more constrained model, we fixed the pathway from likelihood of amelioration to supervisory satisfaction at zero (see Figure 1b). This specification of no relationship between amelioration and supervisory satisfaction is consistent with prominent theories of relative deprivation (e.g., Davies, 1969; Gurr, 1970) that make no predictions about the effects of future expectations on dissatisfaction with authorities. Instead, the theories emphasize relationships between likelihood of amelioration and outcomes. By including a pathway from likelihood of amelioration to satisfaction with supervisor in our original model, we extended these theories by proposing that future expectations affect not only satisfaction with tangible job outcomes, but also with the authority who may be instrumental for change.

In the third, less constrained model, we introduced a direct effect of likelihood of amelioration on withdrawal cognitions (see Figure 1c). Writings on relative deprivation and turnover converge to support this predic-

tion. First, Martin (1981) contended that turnover and absenteeism are most likely to occur when employees believe organizations are unreceptive to change. Similarly, several relative deprivation studies have suggested that pessimism about improvement can trigger discontent and anger (Bernstein & Crosby, 1980; Crosby & Gonzalez-Ital, 1984). Relatedly, some turnover theorists (e.g., Mobley et al., 1979) have noted that anticipated attainment of a more valued outcome or role can inhibit exits, despite current job dissatisfaction; others (Hulin, 1991; Steers & Mowday, 1981) have argued that dissatisfied employees' optimistic beliefs that they can take effective action to rectify their situation can deter their withdrawal. Accordingly, we compared this model predicting that likelihood of amelioration weakens withdrawal to the original model.

METHODS

Procedures and Respondent Characteristics

A survey was administered to 192 employees of a large northeastern hospital; employees were in small groups, and the survey was given on hospital time. Respondents provided their names on the questionnaires so that we could match survey responses to later organizational exits. We guaranteed the confidentiality of individual survey responses, emphasizing that study participation was voluntary. Usable data on all study variables were obtained from 150 employees. Men constituted 21 percent and Caucasians 95 percent of the respondents. Their average age was 31 years, and their average organizational tenure was 5.1 years. The average number of dependents (counting the respondent) was 1.94, and 52 percent were married. Sixty-six percent had formal education beyond high school, 90 percent worked full-time, and 35 percent were nurses.

Measurement of Model Constructs

Referent outcomes. Six items similar to those used in past referent cognitions theory research (Folger, 1977) were used to measure referent outcomes. Respondents compared their pay, education, and experience to those of others both internal and external to their work groups and organization using a five-point Likert-type scale (1 = strongly agree, 5 = strongly disagree). An exemplary item is "The pay rate for my job is higher than the pay rate for the same job in other companies in this area." The Likert scale was anchored in such a way that *high* ratings on the items indicated the referent received higher pay than the respondent.

Procedural justification. Three items assessed perceived procedural justification for outcomes. Like other procedural justice measures (e.g., McFarlin & Sweeney, 1992; Niehoff & Moorman, 1993), the items asked respondents to report how consistently procedures governing work standards, effort expended, and behavior were applied within the organization. A sample item is "Some people in my department get by without meeting work stan-

dards." Items were rated so that a high value indicated high procedural justification.

Interpersonal justification. Six items measured justification based on the personal treatment employees received from their immediate supervisors. Consistent with previous measurements (Bies & Shapiro, 1987; Moorman, 1991), these items asked respondents to rate their supervisors' behavior with regard to fairness, impartiality, and consistency. A sample item is "My supervisor sees to it that all of us meet work standards." A high scale rating indicated high interpersonal justification.

Likelihood of amelioration. This construct was measured by asking respondents to "list five of the most important things that you consider when making a choice between jobs" (e.g., interesting work). Respondents then estimated their chances of attaining these outcomes from their present jobs on a scale ranging from 1 (no chance) to 5 (100% chance). These likelihood ratings were averaged. For some respondents, elicited outcomes might correspond imperfectly to measured referent outcomes. Although the measure of amelioration was partially detached from referent outcomes, having respondents provide an idiosyncratic set of ameliorating outcomes reduced response sets that might inflate relationships between this measure and the satisfaction indexes. Moreover, the scale format captured job characteristics that more strongly impacted satisfaction and withdrawal cognitions.

Outcome satisfaction. Following Mobley and colleagues' (1979) conception of satisfaction as a purely affective reaction to a job, we used six 7-point bipolar (e.g., 1 = bad, 7 = good) adjective sets to measure satisfaction with pay and promotions. This index corresponds to Scott's semantic measure of morale (Scott, 1967; Scott & Rowland, 1970).

Supervisory satisfaction. Three 7-point bipolar adjective sets, similar to the above scale, measured this attitude.

Withdrawal cognitions. We used Hom and Griffeth's (1991) six-item validated measure of this construct. Two items measured each of the following components: intention to quit, intention to search, and thoughts of quitting. All items had a five-point likelihood scale (1 = no chance, 5 = 100% chance).

Turnover. Since we were only concerned about modeling voluntary turnover, it was essential to differentiate between voluntary and involuntary exits. This determination was made from confidential exit interviews the personnel department conducted with departing employees. The variable voluntary turnover was coded 1 for quitters and 0 for others. Five percent of the sample voluntarily left one year after the survey.

Statistical Analyses

Because the sample size was modest, we evaluated manifest rather than latent structural models using LISREL 8 (Jöreskog & Sörbom, 1993). To reduce interpretational confounding, we performed a confirmatory factor analysis (CFA) to verify our items' factor structure (Anderson & Gerbing, 1988). The measurement model assessed whether all items in a given scale

represented the same latent factor. We then aggregated only those items reflecting a common construct to derive unidimensional composite scales for the structural model tests (Anderson & Gerbing, 1988).

To evaluate the structural model, we followed Bollen's (1990) recommendation to interpret multiple indexes of model fit. We reviewed LISREL fit statistics, such as the chi-square test and root-mean-square residual (RMSR). To supplement these indices, we examined the normed fit index (NFI; Bentler & Bonett, 1980) because, unlike the chi-square test, its calculation does not depend on sample size (Bollen, 1990). We also considered the goodness-of-fit index (GFI; Jöreskog & Sörbom, 1984) and the comparative fit index (CFI; Bentler, 1990), both of which are relatively stable in samples smaller than 250 (Hu & Bentler, 1995).

We evaluated the absolute fit of our theoretical model by following Anderson and Gerbing's (1988) recommendations. We assessed a sequence of nested alternative models via sequential chi-square difference tests. First, our theoretical model was compared to a null model that includes no structural relations among the constructs. The theoretical model was then compared to (1) a saturated model specifying all unidirectional relations among constructs, (2) a more constrained alternative model in which one path was removed from the theoretical model, and (3) a less constrained alternative model in which an extra pathway was added to the theoretical model.

RESULTS

According to the confirmatory factor analysis, the initial measurement model fit the data poorly ($\chi^2 = 1{,}538.43$, $df = 539$, $p < .05$; RMSR = .11, NFI = .63, CFI = .72). This poor fit was not surprising since measurement model respecification is typically required (Anderson & Gerbing, 1988). Respecification decisions should follow both content and statistical considerations. Deleting problem indicators is the preferred solution for poor fit (Anderson & Gerbing, 1988). On the basis of item content evaluation and inspection of modification indexes, we dropped six indicators from the model. Doing this resulted in a substantially improved fit for the measurement model ($\chi^2 = 440.80$, $df = 356$, $p < .05$; RMSR = .07, NFI = .84, CFI = .96). Although the chi-square statistic is still significant, the measurement model was deemed acceptable, given the other supportive indexes (Anderson & Gerbing, 1988).

Table 1 presents the means, standard deviations, reliabilities, and correlations among the model components.

Only withdrawal cognitions significantly predicted turnover ($r = .24$, $p < .05$), indicating that it was a more proximal determinant of turnover than referent cognitions theory constructs or job satisfaction (Hom & Griffeth, 1995; Tett & Meyer, 1993). Also, as expected, the referent cognitions constructs were all significantly related to both outcome and supervisory satisfaction. The measures of procedural and interpersonal justification were moderately correlated ($r = .58$, $p \leq .05$). Although this pattern is not surprising, given that a well-regarded supervisor is likely to use fair procedures, it may indicate a lack of discriminant validity in the measures.

TABLE 1
Means, Standard Deviations, and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8
1. Referent outcomes	3.33	0.62	(.70)							
2. Likelihood of amelioration	3.24	0.88	−.29*	(.74)						
3. Procedural justification	3.53	0.89	−.26*	.20*	(.78)					
4. Interpersonal justification	2.90	0.73	−.14	.23*	.58*	(.80)				
5. Outcome satisfaction	3.81	1.61	−.58*	.50*	.25*	.27*	(.90)			
6. Supervisory satisfaction	4.87	1.55	−.19*	.33*	.31*	.44*	.35*	(.96)		
7. Withdrawal cognitions	2.55	1.02	.20*	−.41*	−.19*	−.33*	−.31	−.36*	(.88)	
8. Turnover	0.05	0.23	.06	−.03	−.09	−.09	−.10	.01	.24*	

[a] Cronbach alpha reliabilities are shown along the diagonal.
* $p < .05$

To test for discriminant validity, we fixed the correlation parameter between the two constructs at 1.0 and used a chi-square difference test to compare the constrained and unconstrained models (Bagozzi & Phillips, 1982). The test showed that discriminant validity was achieved between procedural and interpersonal justification ($\chi^2_d = 70.50$, $df = 1$, $p < .001$).

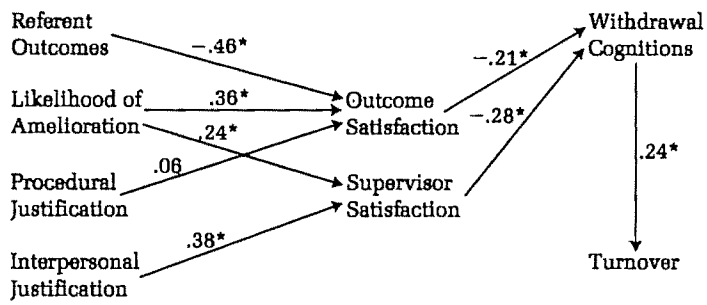
According to Folger, Rosenfielc, and Rheaume (1983), likelihood of amelioration exerts an interactive effect on relative deprivation, with feelings of deprivation experienced only when there is a high referent outcome and low likelihood of amelioration. In our model, however, we treated likelihood of amelioration as a main effect. To test for a possible interaction, we performed moderated regression analyses on both satisfaction variables. No significant interactions were found, supporting the predicted effect of likelihood of amelioration on satisfaction.

After achieving a satisfactory measurement model and ruling out the interactive effects of likelihood of amelioration, we evaluated the structural model. Our theoretical model fit the data well ($\chi^2 = 29.49$, $df = 14$, $p < .05$; GFI = .96, RMSR = .08, NFI = .90, and CFI = .94). Equally important, the standardized parameter estimates shown in Figure 2a indicate that all but one of the hypothesized relationships were significant and in the predicted direction.

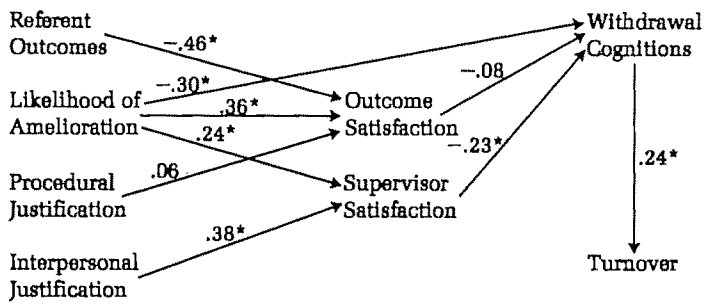
Both outcome and supervisor satisfaction were significantly predicted by amelioration. Referent outcomes also decreased outcome satisfaction. With regard to procedural and interpersonal justification, parameter estimates showed that interpersonal justification affected satisfaction with supervisor. The proposed effect of procedural justification and outcome satisfaction was refuted, however. Consistent with prior research, both outcome satisfaction and supervisor satisfaction lowered withdrawal cognitions

FIGURE 2
Estimated Referent Cognitions Models of Employee Turnover

(2a) Original Theoretical Model



(2b) Final Alternative Model



*$p < .05$

(Graen & Ginsburgh, 1977; Rusbult & Farrell, 1983). Finally, withdrawal cognitions increased resignations, as predicted by our model. In sum, the model satisfactorily fit the data, and its parameter estimates upheld nearly all pathways.

Table 2 shows the results of the nested model comparisons. In step 1, we compared our theoretical model to the null model. As expected, the theoretical model showed significant improvement over the null model (χ^2_d = 169.13, $df = 8$, $p < .05$). In the next step, we compared our theoretical model to a saturated model. The saturated model showed significant improvement over the theoretical model ($\chi^2_d = 29.49$, $df = 14$, $p < .05$). Following Anderson and Gerbing (1988), we then compared our theoretical model with a more constrained alternative. Results indicated that the theoretical model reproduced observed covariances more precisely than the more constrained alternative ($\chi^2_d = 10.80$, $df = 1$, $p < .05$).

Next, we compared our theoretical model with the less constrained

TABLE 2
Nested Model Comparisons[a]

Model	χ^2	RMSR	GFI	NFI	CFI	$\Delta\chi^2$
1. Null model	198.62*	.30	.74	.32	.33	
2. Referent cognitions model of the turnover process	29.49*	.08	.96	.90	.94	
Model 1 versus model 2						169.13*
3. Saturated model	0.00					
Model 2 versus model 3						29.49*
4. More constrained alternative model	40.29*	.14	.94	.86	.90	
Model 4 versus model 2						10.80*
5. Less constrained alternative model	17.78[b]	.08	.97	.94	.98	
Model 2 versus model 5						11.71*
Model 5 versus model 3						17.78[b]

[a] RMSR = root-mean-square residual; GFI = goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index.

[b] Values are not significant.

*$p < .05$

alternative. This alternative produced a fit superior to that of the theoretical model ($\chi^2_d = 11.71$, $df = 1$, $p < .05$). Thus, our second alternative model appeared to explain the data better than the theoretical model. Thus, we next compared the less constrained alternative model with the saturated model. The saturated model did not show significant improvement over the less constrained alternative model ($\chi^2_d = 17.78$, $df = 13$, n.s.). Hence, nested model comparisons indicate that this alternative model explains the data as well as the best-fitting (saturated) model, but more parsimoniously. This conclusion is reinforced by the alternative model's high fit indexes ($\chi^2 = 17.78$, $df = 13$, n.s.; GFI = .97, RMSR = .08, NFI = .94, CFI = .98).

Figure 2b displays standardized parameter estimates of the less constrained alternative model. Consistent with theoretical expectations, referent outcomes and likelihood of amelioration predicted outcome satisfaction. Likelihood of amelioration and interpersonal justification also predicted satisfaction with supervisor. Withdrawal cognitions remained a significant predictor of turnover. But once again we found that procedural justification did not significantly predict outcome satisfaction. The additional path in the alternative model was supported, as withdrawal cognitions were significantly and negatively related to likelihood of amelioration. Finally, although satisfaction with supervisor remained a significant predictor of withdrawal cognitions, these cognitions were no longer significantly predicted by outcome satisfaction.

DISCUSSION

The present study provides encouraging evidence for our integration of referent cognitions theory constructs with turnover. The fit indexes of our model fell within acceptable ranges, and all the hypothesized relationships

among the constructs but one were supported. Consistent with referent cognitions theory predictions, the relationship we found between referent outcomes and outcome satisfaction was negative, and that between interpersonal justification and supervisory satisfaction was positive. As predicted, likelihood of amelioration also increased both satisfaction facets. The only hypothesized relationship not supported was the path relating procedural justification and outcome satisfaction.

Despite the good fit obtained for our theoretical model, a less constrained alternative model fit the data better. Unlike the original formulation, this model contains a direct negative relationship between likelihood of amelioration and withdrawal cognitions. Except for this path and the nonsignificant path from outcome satisfaction to withdrawal cognitions, which is discussed below, parameter estimates of the rival model did not vary materially from those of the theoretical model.

In both the alternative and original models, procedural justice did not increase outcome satisfaction. This result is consistent with previous research that has shown that perceptions of procedural justice are less pivotal determinants of pay satisfaction than distributive justice (Folger & Konovsky, 1989; Konovsky et al., 1987; McFarlin & Sweeney, 1992). Taken together, the findings suggest that distributive and procedural justice exert different effects depending upon the outcome considered. Similarly, the marked contrast between procedural justification's nonsignificant effect and interpersonal justification's significant impact on supervisory satisfaction suggests that favorable interpersonal treatment from authorities overrides concerns employees may have about the structural characteristics of formal procedures. Another plausible explanation for the nonsignificant effect of procedural justice, however, may be that it is a more distal cause of other exogenous variables. For example, perceptions of high procedural justice may raise the likelihood of amelioration. Unfortunately, this hypothesis could not be tested in the present study because both procedural justice perceptions and likelihood of amelioration were measured at the same time.

In the original and unconstrained alternative models, likelihood of amelioration affected both satisfaction facets. These relationships may reflect what Folger, Rosenfield, and Rheaume (1983) referred to as the "replacement effect": when a person believes an inadequate outcome has a good chance of being ameliorated, a positive affect is induced. Our findings accord with research showing that affective states determine whether people are dissatisfied with their jobs more strongly than objective features of the jobs themselves do (Staw, Bell, & Clausen, 1986). Besides corroborating prior work, we also discovered that likelihood of amelioration directly discouraged withdrawal cognitions. The latter finding upholds a longstanding contention by Mobley and colleagues (1979) that employees' expectations about the future attainment of desirable roles or role outcomes can promote their retention.

In our final models, outcome satisfaction did not decrease withdrawal cognitions. This result appears to show that outcome satisfaction does not

fully mediate the effects of referent cognitions theory constructs and the turnover process as we predicted. Moreover, if we also take into account that satisfaction showed virtually no correlation to actual turnover, our argument for a mediated process is further weakened. However, we suggest that it is not necessarily inaccurate to contend that satisfaction is indirectly related to turnover through withdrawal cognitions.

Mediation is customarily thought of in its strongest version, which requires that X be significantly related to Y as a precondition for showing that a third variable (M) mediates this link (Baron & Kenny, 1986). However, we suggest that mediation also exists when X is not directly related to Y but is only related through M. Such mediation was claimed by Wright, who asserted that goal setting mediated the effects of incentives on performance despite a nonsignificant relationship between incentives and performance. Moreover, the idea that the variable withdrawal cognitions mediates the influence of satisfaction on turnover is consistent with prior empirical evidence (Hom & Griffeth, 1991; Tett & Meyer, 1993) and thought about turnover (Hom & Griffeth, 1991; Mobley, 1977). Finally, it should be recalled that this pathway was significant in our original model, which suggests that it may be premature to reject the hypothesized effect of mediation via outcome satisfaction outright.

A second possible interpretation of the nonsignificant relationship between outcome satisfaction and withdrawal cognitions is that interpersonal concerns (supervisor satisfaction) may exert the dominant effect on these cognitions. In both the original and unconstrained models, supervisor satisfaction influenced withdrawal cognitions more strongly than did outcome satisfaction. These results paralleled our findings regarding the relative effects of interpersonal and procedural justification on the two facets of satisfaction. Taken together, these results suggest that the way people are treated in organizations exerts a powerful effect on their reactions that is independent of the objective features of the work environment.

Although the data better supported the less constrained alternative model, these results should be regarded cautiously. First, the alternative model needs to be replicated in a new sample to determine if its structural relationships are robust. Second, we omitted other turnover determinants from the model that might have improved its capacity to predict turnover. Of course, failure to represent every conceivable determinant is a problem of any model test. Third, two of the proposed relationships in the alternative model were repudiated. We offered several plausible explanations for the null results, but research with different samples and measurements of constructs is needed to provide more definitive evidence of the validity of these explanations.

Finally, it might be argued that the absence of relationships between satisfaction facets and turnover is problematic. However, a recent meta-analysis (Hom & Griffeth, 1995) reported that pay and promotion satisfaction were weakly related to turnover (r's = −.04 and −.14, respectively, after correction for measurement errors), with the 95 percent credibility interval

for both including zero. The relationship between supervisory satisfaction and turnover was also very low (–.10). Moreover, from one-third to over one-half of the bivariate correlations were nonsignificant. Hom and Griffeth (1995) identified several important factors as having contributed to these null findings: a low turnover base rate, its dichotomous measurement, predictor unreliability, and, of course, sample size, all of which can influence the magnitude of correlations between predictors and turnover. Thus, our findings are not entirely inconsistent with previous research.

The present research makes several theoretical and practical contributions to the literature. First, it supports Martin's (1981) argument that relative deprivation can increase turnover. Second, it fully describes and provides evidence for the psychological mechanisms by which felt deprivation emerges and activates quitting. Third, it outlines a model for future research in which the importance of perceived prospects for the amelioration of present circumstances, an overlooked turnover antecedent introduced by Mobley and colleagues (1979), is recognized. One interesting question posed by the alternative model is, what happens when loyal organization members expect their situations to improve and those expectations not met? Davies's (1969) theory of rising expectations suggests that such an event can lead to high levels of frustration and acts of collective violence. In an organizational context, there may be an increase in deviant behaviors like theft, industrial sabotage, sick-outs, and strikes (Martin, 1981).

A managerial implication is that the present research affirms the powerful effect the interpersonal context can have on employee attitudes and behaviors. The relative strength of the effects of interpersonal and procedural justification suggests that the actions of managers rather than the formal structure of procedures tend to elicit the strongest responses from employees. This interpretation coincides with Sheppard, Lewicki, and Minton's (1992) argument that people are more likely to blame people than systems for poor outcomes. Indeed, Bies (1987) argued that managers can reduce feelings of discontent resulting from poor outcomes or unfair procedures by providing the aggrieved with social accounts that appear legitimate and sincere. Thus, our model suggests that poor management of employee perceptions of interactional justice at the supervisory level may ultimately inspire employees to quit. Consequently, for organizations facing economic constraints or unresponsive formal structures, training and rewarding managers for promoting interactional justice may be a cost-effective way to deter voluntary organizational exit.

REFERENCES

Adams, J. S. 1965. Inequity in social exchange. In L. Berkowitz (Ed.), ***Advances in experimental psychology,*** vol. 2: 267–299. New York: Academic Press.

Alexander, S., & Ruderman, M. 1987. The role of procedural and distributive justice in organizational behavior. ***Social Justice Research,*** 1: 177–198.

Anderson, J. G., & Gerbing, D. W. 1988. Structural equation modeling in practice: A review and recommended two-step approach. ***Psychological Bulletin,*** 103: 411–423.

Bagozzi, R. P., & Phillips, L. W. 1982. Representing and testing organizational theories: A holistic construal. ***Administrative Science Quarterly,*** 27: 459–489.

Baron, R.M., & Kenny, D.A. 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. ***Journal of Personality and Social Psychology,*** 51: 1173–1182.

Bentler, P. M. 1990. Comparative fit indexes in structural models. ***Psychological Bulletin,*** 107: 238–246.

Bentler, P. M., & Bonett, D. G. 1980. Significance tests and goodness of fit in the analyses of covariance structures. ***Psychological Bulletin,*** 88: 588–606.

Bernstein, M., & Crosby, F. 1980. An empirical examination of relative deprivation theory. ***Journal of Experimental Social Psychology,*** 16: 442–456.

Bies, R. J. 1987. The predicament of injustice: The management of moral outrage. In L. L. Cummings & B. M. Staw (Eds.), ***Research in organizational behavior,*** vol. 9: 289–319. Greenwich, CT: JAI Press.

Bies, R. J., & Moag, J. S. 1986. Interactional justice: Communication criteria of fairness. In R. Lewicki, B. Sheppard, & M. Bazerman (Eds.), ***Research on negotiation in organizations:*** 43–53. Greenwich, CT: JAI Press.

Bies, R. J., & Shapiro, D. L. 1987. Interactional fairness judgements: The influence of causal accounts. ***Social Justice Research,*** 1: 199–218.

Bollen, K. A. 1990. Overall fit in covariance structural models: Two types of sample size effects. ***Psychological Bulletin,*** 107: 256–259.

Cropanzano, R., & Folger, R. 1989. Referent cognitions and task decision autonomy: Beyond equity theory. ***Journal of Applied Psychology,*** 74: 293–299.

Crosby, F. 1984. Relative deprivation in organizational settings. In L. L. Cummings & B. M. Staw (Eds.), ***Research in organizational behavior,*** vol. 6: 51–94. Greenwich, CT: JAI Press.

Crosby, F., & Gonzalez-Ital, A. M. 1984. Relative deprivation and equity theories. In R. Folger (Ed.), ***The sense of injustice: Social psychological perspectives:*** 141–166. New York: Plenum.

Davies, J. C. 1969. Toward a theory of revolution. ***American Sociological Review,*** 27: 5–19.

Dittrich, J. E., & Carrell, M. R. 1979. Organizational equity perceptions, employee job satisfaction, departmental absence and turnover rates. ***Organizational Behavior and Human Performance,*** 24:29–40.

Folger, R. 1977. Distributive and procedural justice: Combined impact of "voice" and peer opinions on responses to inequity. ***Journal of Personality and Social Psychology,*** 35: 108–119.

Folger, R. 1987. Reformulating the preconditions of resentment: A referent cognitions model. In J. C. Masters & W. P. Smith (Eds.), ***Social comparison, social justice, and relative deprivation: Theoretical, empirical, and policy perspectives:*** 183–215. Hillsdale, NJ: Erlbaum.

Folger, R., & Konovsky, M. A. 1989. Effects of distributive and procedural justice on reactions to pay raise decisions. ***Academy of Management Journal,*** 32: 115–130.

Folger, R., & Martin, C. 1986. Relative deprivation and referent cognitions: Distributive and procedural justice effects. ***Journal of Experimental Social Psychology,*** 22: 531–546.

Folger, R., Rosenfield, D., Grove, J., & Corkran, L. 1979. Effects of "voice" and peer opinions on responses to inequity. ***Journal of Personality and Social Psychology,*** 37: 2253–2261.

Folger, R., Rosenfield, D., & Rheaume, K. 1983. Role-playing effects of likelihood and referent outcomes on relative deprivation. ***Representative Research in Social Psychology,*** 13: 2–10.

Folger, R., Rosenfield, D., Rheaume, K., & Martin, C. 1983. Relative deprivation and referent cognitions. ***Journal of Experimental Social Psychology,*** 19: 172–184.

Folger, R., Rosenfield, D., & Robinson, T. 1983. Relative deprivation and procedural justifications. ***Journal of Personality and Social Psychology,*** 45: 268–273.

Graen, G. B., & Ginsburgh, S. 1977. Job resignation as a function of role orientation and leader acceptance: A longitudinal investigation of organizational assimilation. ***Organizational Behavior and Human Performance,*** 19: 1–17.

Graen, G. B., Liden, R., & Hoel, W. 1982. Role of leadership in the employee withdrawal process. ***Journal of Applied Psychology,*** 67: 868–872.

Greenberg, J. 1987. A taxonomy of organizational justice theories. ***Academy of Management Review,*** 12: 9–22.

Greenberg, J. 1990. Organizational justice: Yesterday, today, and tomorrow. ***Journal of Management,*** 16: 399–432.

Greenberg, J., & Folger, R. 1983. Procedural justice, participation, and the fair process effect in groups and organizations. In P. B. Paulus (Ed.), ***Basic group processes:*** 235–256. New York: Springer-Verlag.

Gurr, T. R. 1970. ***Why men rebel.*** Princeton: Princeton University Press.

Hom, P. W., & Griffeth, R. W. 1995. ***Employee turnover.*** Cincinnati: South-Western.

Hom, P. W., & Griffeth, R. W. 1991. Structural equations modeling test of a turnover theory: Cross-sectional and longitudinal analyses. ***Journal of Applied Psychology,*** 76: 350–366.

Homans, G.L. 1974. ***Social behavior: Its elementary forms.*** New York: Harcourt Brace Jovanovich.

Hu, L., & Bentler, P. M. 1995. Evaluating model fit. In R. H. Hoyle (Ed.), ***Structural equation modeling: Concepts, issues, and applications.*** Thousand Oaks, CA: Sage.

Hulin, C. L. 1991. Adaptation, persistence, and commitment in organizations. In M. D. Dunnette & L. M. Hough (Eds.), ***Handbook of industrial and organizational psychology*** (2nd ed.), vol. 2: 445–505. Palo Alto, CA: Consulting Psychologists Press.

Hulin, C. L., Roznowski, M., & Hachiya, D. 1985. Alternative opportunities and withdrawal decisions: Empirical and theoretical discrepancies and an integration. ***Psychological Bulletin,*** 97: 233–250.

Jöreskog, K. G., & Sörbom, D. 1993. ***LISREL 8: Structural equation modeling with the SIMPLIS command language.*** Hillsdale, NJ: Scientific Software.

Jöreskog, K. G., & Sörbom, D. 1984. ***LISREL VI user's guide.*** Mooresville, IN: Scientific Software.

Konovsky, M. A., & Cropanzano, R. 1991. Perceived fairness of employee drug testing as a predictor of employee attitudes and job performance. ***Journal of Applied Psychology,*** 76: 698–707.

Konovsky, M. A., Folger, R., & Cropanzano, R. 1987. Relative effects of procedural and distributive justice on employee attitudes. ***Representative Research in Social Psychology,*** 17: 15–25.

Lee, T. W. 1996. ***Family characteristics and the prediction of voluntary employee turnover.*** Paper presented at the annual meeting of the Academy of Management, Cincinnati.

Lee, T. W., & Mitchell, T. R. 1994. An alternative approach: The unfolding model of voluntary turnover. ***Academy of Management Review,*** 19: 51–89.

Lind, E. A., & Tyler, T. R. 1988. ***The social psychology of procedural justice.*** New York: Plenum Press.

MacCallum, R. C., Wegener, D. T., Uchino, B. N., & Leandre, R. F. 1993. The problem of equivalent models in applications of covariance structure analysis. ***Journal of Applied Psychology,*** 114: 185–199.

Martin, J. 1981. Relative deprivation: A theory of distributive justice for an era of shrinking

resources. In L. L. Cummings & B. M. Staw (Eds.), ***Research in organizational behavior,*** vol. 3: 53–108. Greenwich, CT: JAI Press.

McFarlin, D. B., & Sweeney, P. D. 1992. Distributive and procedural justice as predictors of satisfaction with personal and organizational outcomes. ***Academy of Management Journal,*** 35: 626–637.

Mobley, W. 1977. Intermediate linkage in the relationship between job satisfaction and employee turnover. ***Journal of Applied Psychology,*** 62: 237–240.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. 1979. Review and conceptual analysis of the employee turnover process. ***Psychological Bulletin,*** 86: 493–522.

Moorman, R. H. 1991. The relationship between organizational justice and organizational citizenship behaviors: Do fairness perceptions influence employee citizenship? ***Journal of Applied Psychology,*** 76: 845–855.

Niehoff, B. P., & Moorman, R. H. 1993. Justice as a mediator of the relationship between methods of monitoring and organizational citizenship behavior. ***Academy of Management Journal,*** 36: 527–556.

O'Reilly, C. A. 1991. Organizational behavior: Where we've been, where we're going. In M. Rosenzweig & L. Porter (Eds.), ***Annual review of psychology:*** 427–458. Palo Alto, CA: Annual Reviews.

Price, J. L., & Mueller, C. W. 1986. ***Absenteeism and turnover of hospital employees.*** Greenwich, CT: JAI Press.

Rusbult, C. E., & Farrell, D. 1983. A longitudinal test of the investment model: The impact of job satisfaction, job commitment, and turnover on variations in rewards, costs, alternatives, and investments. ***Journal of Applied Psychology,*** 68: 429–438.

Scott, W. E. 1967. The development of semantic differential scales on measures of "morale." ***Personnel Psychology,*** 20: 179–198.

Scott, W. E., & Rowland, K. 1970. The generality and significance of semantic differential scales as measures of morale. ***Organizational Behavior and Human Performance,*** 5: 576–591.

Sheppard, B., Lewicki, R., & Minton, J. 1992. ***Organizational justice: The search for fairness in the workplace.*** Toronto: Lexington Books.

Staw, B. M., Bell, N. E., & Clausen, J. A. 1986. The dispositional approach to job attitudes: A lifetime longitudinal test. ***Administrative Science Quarterly,*** 31: 56–77.

Steers, R. M., & Mowday, R. T. 1981. Employee turnover and postdecision accommodation processes. In L. L. Cummings & B. M. Staw (Eds.), ***Research in organizational behavior,*** vol. 3: 235–281.

Tett, R. P., & Meyer, J. P. 1993. Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic findings. ***Personnel Psychology,*** 46: 259–293.

Thibaut, J. W., & Walker, L. 1975. ***Procedural justice: A psychological analysis.*** Hillsdale, NJ: Erlbaum.

Tyler, T. R., & Bies, R. J. 1990. Beyond formal procedures: The interpersonal context of procedural justice. In J. S. Carroll (Ed.), ***Applied social psychology in business settings:*** 77–98. Hillsdale, NJ: Erlbaum.

Walster, E., Walster, G. W., & Berscheid, E. 1978. ***Equity: Theory and research.*** Boston: Allyn & Bacon.

Wright, P. 1989. Test of the mediating role of goals in the incentive-performance relationship. ***Journal of Applied Psychology,*** 74: 699–705.

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MEASURING BELIEFS: ACCEPT NO SUBSTITUTES

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Ever since Hambrick and Mason suggested that external individual characteristics can be used as substitutes for individuals' cognitive bases, management researchers have been using these characteristics as proxies for cognition. However, the actual evidence for a relationship between cognitive bases and individual characteristics is equivocal at best. My study of 91 managers showed a relationship between some of the most cited characteristics and beliefs, but I argue that such a finding does not support substituting characteristics for cognition.

Researchers have long been aware that decision making is an interplay between the environment and the cognition of the decision makers (e.g., March & Simon, 1958; Simon, 1948). This awareness has resulted in a long-standing interest in individual managerial knowledge and beliefs on the part of scholars who consider strategic decisions to be important in organizational adaptation (e.g., Child, 1972; Silverman, 1970).

Because it is difficult to measure knowledge and beliefs, the level of empirical work has not matched scholars' level of interest in cognition. This discrepancy explains the eagerness of many scholars to utilize the suggestion of Hambrick and Mason (1984) that individual knowledge and beliefs can be captured without opening the "black box" of cognition. The essence of this suggestion is that since individual cognition is shaped by individual experiences and since these in turn are reflected in external characteristics (such as age, functional background, and so forth), those external characteristics can be used as proxy measures for individual cognition. Hambrick and Mason used their assumption in a model that described the role of the "upper echelon" (or the top management team) of a firm in making strategic choices. Even though their theoretical focus was on teams, their "primary emphasis [was] placed on observable managerial characteristics [as measures of individual cognition] that a manager brings to an administrative situation" (Hambrick & Mason, 1984: 196). Thus, the rational for using external characteristics was on the level of the individual. Several researchers have followed Hambrick and Mason's lead.

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Hitt and Tyler (1991), for example, focused on the relationship between individual characteristics of 64 senior managers and the evaluation criteria they used in acquisition decisions. The authors stated that a relationship existed "because individuals approach complex decisions with previously constructed heuristics or cognitive models that are reflected in personal characteristics" (Hitt & Tyler, 1991: 324).

In another example, Wiersema and Bantel (1992) suggested a relationship between the likelihood of strategic change and top management teams' receptivity to change and willingness to take risks. They did not measure receptivity to change and willingness to take risks, however, but instead used the average age, tenure, educational level, and dominant educational background in 87 top management teams as measurements.[1] They claimed that finding a relationship between some of these average characteristics and the likelihood of organizational change "provides encouragement for those interested in pursuing the upper echelons perspective of Hambrick and Mason . . . to measure individuals' cognitive bases" (Wiersema & Bantel, 1992: 112). Other studies have used individual characteristics as substitutes in a similar manner.

To give a final example, Buchholtz and Ribbens stated that "idiosyncratic preferences [of the CEOs] can stem from individual characteristics and backgrounds" (1994: 560). They asserted a relationship between age and resistance to change, arguing that risk propensity declines with age, but not measuring such a decline. Studies like these are now an integral part of the literature. But the core of these assumptions, the idea that individual characteristics are strongly related to individual cognition, has never been sufficiently tested. This fact carries obvious dangers. Weick pointed this out: "Any discipline will rise or fall depending on the reliability and validity of the observations on which its theories are based. Few fields have made so much of so little as has organization theory. The large number of theories, concepts, and prescriptions in this field far out-distance the empirical findings on which they are supposed to be grounded" (1979: 18).

Those studies that have tested for a relation between an individual characteristic and cognition have produced conflicting results. Dearborn and Simon (1958), for example, hypothesized that managers' views are biased by their functional positions. However, Walsh (1988) and Waller, Huber, and

[1] Wiersema and Bantel labeled these averages "demographic" characteristics and treated them as group-level measures. I consider their averages neither demographic nor group-level measures. Individual characteristics are features of individuals, and demography is about distributional properties (e.g., homogeneity) that are only applicable to a collection and never to an individual. Although such composition is calculated from individual characteristics, "It is the distributional properties of demography, not merely single descriptive statistics, such as mean, median, or proportion . . . that can be critical in understanding . . . demography" (Pfeffer, 1983: 307). Even if my use of the word "demography" is too narrow, Wiersema and Bantel's study can coherently be interpreted as being about individual characteristics.

Glick (1995) remained unconvinced that Dearborn and Simon's (1958) data supported their claim about bias, and the later authors' own studies also failed to support Dearborn and Simon's claim.

Similarly equivocal findings can be listed for other individual characteristics, where their relationships to cognition have been tested at all. So further tests are required to evaluate the validity of studies in which individual characteristics serve as substitutes for cognition. This study was designed to be such a test. It tested the existence of a relationship between the beliefs of 91 managers in four organizations and some selected individual characteristics.

After describing the theoretical considerations for selecting beliefs as a measure of individual cognition, I describe the external characteristics I investigated as possible substitute measures of individual cognition. This account is followed by a description of the sample together with a description of the causal mapping technique that was used to measure beliefs. Data analysis is followed by a discussion containing implications for existing and future research.

INDIVIDUAL BELIEFS

Individual cognition has had several different meanings in studies in which individual characteristics serve as substitute measures. I focus here on Hambrick and Mason (1984), as this work is the main source of the other studies. In their model, Hambrick and Mason discussed what they called the "cognitive base," which was to be captured in individual characteristics. Although the authors did not define the cognitive base, they suggested that it stood for knowledge that guides individual decision making. Knowledge is generally defined as a subset of beliefs that includes "justified true beliefs" (Moser, 1995: 234). However, beliefs do not have to be justified or true to affect decisions. It is sufficient if individuals merely regard some concepts or relationships to be true. Thus, I selected beliefs, rather than knowledge, to capture individual cognition. Beliefs are defined as concepts and perceived relationships between things and concepts that individuals *hold to be true* (Bem, 1970).

Individuals hold many different beliefs in many different domains, not all of which are relevant here. This research only needed to be concerned with beliefs that guide strategic decisions in a business domain. Strategic decisions include the selection of strategically relevant issues (Dutton & Jackson, 1987; Dutton, Walton, & Abrahamson, 1989) and interpretations of those issues and their consequences in the light of a desirable future (Srivastva, 1983). Thus, I measured beliefs with respect to organizational success together with beliefs in cause and effect. In other words, an individual's cognition was measured as beliefs about what was important for the success of his or her organization and the causal relationships between those factors.

EXTERNAL INDIVIDUAL CHARACTERISTICS

Hambrick and Mason (1984) and others have proposed a broad, nonexhaustive list of external individual characteristics as possible proxies for cognition. In this study, I focused solely on the few characteristics that have received both theoretical and empirical backing. If these characteristics do not explain a substantial part of variation in beliefs, there is little reason to believe that other individual characteristics that have not received such support will do better. The characteristics I settled on are functional background, age, hierarchical position, and national-cultural background. The following four hypotheses were tested:

> *Hypothesis 1. Managers with similar functional backgrounds will show larger similarities in their beliefs than will managers with different functional backgrounds.*
>
> *Hypothesis 2. Managers' similarity in age will coincide with similarity in their beliefs.*
>
> *Hypothesis 3. Managers in similar hierarchical positions will show larger similarities in their beliefs than will managers in different hierarchical positions.*
>
> *Hypothesis 4. Managers with similar national-cultural backgrounds will show larger similarities in their beliefs than will managers of different national-cultural backgrounds.*

The limited information-processing capacity of individual managers (Dearborn & Simon, 1958; Walsh, 1988) and the conditioning effects of task-related rewards (Waller et al., 1995) have been invoked as sources of potential functional biases.

Schuman and Scott (1989) found that similarity in age led to similar beliefs, but only to a limited degree. Rhodes (1983), who reviewed the literature, found that existing studies produced inconclusive findings on the existence of a relationship between age and work-related values and beliefs.

Although Hambrick and Mason did not list national background as an individual characteristic that captures beliefs, others have done so (e.g., Wiersema & Bird, 1993). Some cross-cultural psychological studies have shown that national culture can shape individuals' values and beliefs (e.g., Barry & Child, 1957; Weeks, Pedersen, & Brislin, 1982). Others have failed to find strong cross-cultural differences (e.g., Lambert, Hamers, & Frasure-Smith, 1979).

Hambrick and Mason concentrated on top management teams and so were not interested in whether managerial level affected beliefs. Ireland, Hitt, Bettis, and de Porras (1987), however, argued that the hierarchical positions of managers shaped their beliefs because tasks at different levels differed and because different information was available at different hierarchical levels. After investigating 56 managers, they found that firm membership, hierarchical position, and perceived environmental uncertainty all re-

lated to what managers believed to be important indicators of organizational strengths and weaknesses.

In addition to the above characteristics, organization specificity was also considered, for two reasons. Firstly, individuals in different companies may have company-specific experiences that lead to differences in their beliefs. These company-specific experiences might be rooted in company-level differences in routines (Nelson & Winter, 1982) and values and norms (Schein, 1985) that could then shape individual beliefs. More importantly, different issues might be relevant for the success of different organizations. This by itself could cause company-specific differences in individual beliefs if managers faithfully reported the factors relevant to *their* organizations.

METHODS

The Sample

Respondents were 91 managers who worked at four companies in Hungary that had recently come under foreign ownership. There were 20 to 27 managers from each company. The multicultural sample included Hungarian and non-Hungarian managers from U.S., British, and Australian parent companies. Hofstede (1991) found similar cultural values across those three Anglo-Saxon countries. Child and Markóczy (1993) argued that the system of industrial governance employed in a firm may matter more than national culture for many purposes. The United States, Britain, and Australia are all long-standing capitalist liberal democracies, so on both cultural and political-economic grounds it seems reasonable to treat these countries as a group. Managers were selected from the executive level or from one or two levels below as these managers were assumed to be well aware of the strategic issues facing their companies and were likely to be included in strategic decisions.

Of the six international companies that were contacted, five agreed to participate in the study. Only four of these, the ones that had appropriate distributions of managers, were included in this study. The organizations in the sample were a lighting company (company A), a food and coffee-packing company (B), a confectionery company (C), and a soft drink company (D). Their numbers of employees ranged from 1,000 to 9,000, with a mean of 3,000. All four organizations had been acquired in the three or four years prior to my research. Such recent acquisitions tend to have multicultural management teams in Hungary.

Measuring Individual Beliefs

Data on the business beliefs of the managers were collected by eliciting causal maps. I followed the method proposed in Markóczy and Goldberg (1995). I chose to use causal maps to measure individual beliefs because these maps capture beliefs on the relevance of constructs and causal relations among them in a given domain. In the applied causal mapping technique, the following steps are used to elicit maps: (1) development of a

common pool of potentially relevant constructs, (2) selection by each manager of the constructs he or she believes to be relevant, and (3) identification by each manager of the influence relationships, including their strengths (weak, moderate, strong) and the polarity of influence (negative or positive).

The pool of constructs. The pool of constructs relevant to business success in Hungary was derived in part from 30 interviews with Hungarian and non-Hungarian managers in international organizations in Hungary, none of which were in the study sample (Child, Markóczy, & Cheung, 1994). In generating the pool of constructs, I was mainly concerned about covering the issues Hungarian and non-Hungarian managers might consider relevant to success. The pool was developed through several steps: First, I listed issues that managers mentioned as relevant on a summary sheet. Next, two coders with complementary expertise in British and Hungarian national cultures and contexts collapsed the issues into a more compact list. To utilize their complementary skills, the coders sought agreement instead of rating independently. In order to increase the comprehensiveness of the list and to compensate for the possibility that managers might have failed to mention important issues that they took for granted, I added four items taken from Walsh (1988). This addition does not constitute a validity problem since, if these issues were not relevant to the managers, they would simply not have selected them. In the next step, the resulting 64 constructs were further collapsed during a pilot study that included 49 executive master of business administration (M.B.A.) students. Respondents were asked to suggest missing constructs or point out which constructs they thought were very similar in meaning. This process resulted in a final list of 49 constructs. I added a clarifying definition to each construct to decrease potential differences in interpretation by individual subjects.

The constructs and definitions were translated into Hungarian and then back-translated into English. The English version of the constructs appears in Markóczy (1995) and Markóczy and Goldberg (1995).[2] Clarifying definitions and the Hungarian translation are available from the author.

Selecting the constructs. The selection procedure served to identify the factors the managers in the sample viewed as most relevant to the success of their organizations. The respondents were asked to select ten constructs from the pool. Attention span, fatigue, and the comparability of the resulting causal maps determined the limit of ten.

Each construct and its definition appeared on a card. Respondents were asked to remove items that were important (positively or negatively) to the success of their companies from the pile. The "important" pile was then sorted again into "most important" and "least important." This procedure continued until a respondent had a "most important" pile of ten or fewer

[2] Markóczy and Goldberg (1995) contains a portion of the data presented as an example of the use of the method being described. Markóczy (1995) also contains a small portion of the data presented with a detailed discussion of company A.

cards. It typically took individuals four selections to reach this state. The managers whose piles contained fewer than ten cards were then asked to re-select cards from the most recently eliminated pile to achieve a total of ten. They did not know previously that the task was to select ten items.

Eliciting maps. The managers were then asked to consider all possible pairs of constructs. For each pair, they were asked if one construct influenced the other, whether it did so positively or negatively, and whether it did so weakly, moderately, or strongly. With this technique, the existence, the polarity, the direction, and the strength of a perceived influence could be established. The wording of the questions was kept constant from respondent to respondent (in both English and Hungarian).

External individual characteristics. After the elicitation of the causal maps, the managers completed a questionnaire on their personal characteristics. Nationality was decided on the basis of citizenship or, in the case of multiple citizenship, by the country of secondary education. It was coded as a dummy variable, with 0 for non-Hungarians and 1 for Hungarians. Age was measured in years. Hierarchical level was divided into top level (1), which included the executive director and those one managerial level below him (all executive directors in the sample were men), and non–top level (0), which included the rest of the managers. Functional background was defined as "the area in which a manager had spent more time than in any other" (Michel & Hambrick, 1992: 22). Following Hambrick and Mason (1984), I coded functional background as output (0; for marketing and sales) or as throughput (1; for personnel human resources management [HRM], finance/accounting, general management, information systems, and production engineering). Membership in the four companies was coded into a series of three bivariate dummy variables fully sufficient to describe the four-way distinction (Cohen & Cohen, 1983: 183). Table 1 gives descriptive statistics, using frequency for the binary variables.

ANALYSIS

The analysis included the identification of similarities and differences in individual beliefs followed by a calculation of how well these were captured by similarities and differences in individual characteristics. It should be noted that the similarities and differences discussed are between all pairs of individuals and are not part of a group-level analysis. In a sense, this level of analysis (distances between individuals) is higher than the individual level but lower than the group level. The analysis was designed to recover information about the individuals with particular properties even though nothing nonrelational can be said about any individual.

The first step was to calculate distance ratios between pairs of causal maps. I used Markóczy and Goldberg's formula with these parameter settings: $\alpha = 1, \beta = 3, \gamma = 2, \delta = 0, \epsilon = 2$ (cf. Markóczy & Goldberg, 1995: 314, 326). This formula is a modified version of Langfield-Smith and Wirth's (1992: 1149) formula 12. The resulting distance ratio is a rational number between

TABLE 1
Descriptive Statistics by Company

Characteristic	Companies				
	A	B	C	D	All
Function					
Output	4	11	6	9	30
Throughput	16	16	16	13	61
Nationality					
Non-Hungarian	8	8	5	8	29
Hungarian	12	19	17	14	62
Level					
Top	9	5	6	10	30
Not top	11	22	16	12	61
Age					
Mean	48	42	42	40	42
s.d.	9	8	8	8	8
Total	20	27	22	22	91

0 and 1 inclusive, where 0 indicates identical maps and 1, totally dissimilar maps. I calculated distance ratios for the whole sample and used them as input for cluster analyses, the next steps in identifying similar causal maps. As cluster membership is highly sensitive to the cluster analysis technique and cutoff points used, I did not employ cluster membership as the dependent variable; instead, I used similarities to cluster centers.

The following steps were taken after the calculation of the distance ratios between pairs of causal maps (see Markóczy and Goldberg [1995] for details):

1. First, the clusters were calculated using Ward's method (Everitt, 1990), which produces tight and distant clusters. Because there was a large break in the dendogram, two clusters were identified.

2. Cluster centers (or central maps) were calculated for both clusters. In each cluster, the cluster center included the constructs that more than half of the managers selected and the average of the causal links between pairs of these constructs.

3. Distances were then calculated between each central map and each causal map independent of cluster membership. This procedure produced two distance measures for each causal map: one showing how far the map was from cluster center 1 and the other showing how far it was from cluster center 2.

4. To avoid operating with negative numbers, I subtracted each distance from each cluster center from 1. The resulting similarities to cluster centers were used as dependent variables in the analysis.

RESULTS

Table 2 presents Pearson correlations among the variables, including organizational membership, individual characteristics, and closeness to cluster center 1 and cluster center 2. There are several patterns worth noting.

TABLE 2
Correlations[a]

Variable	1	2	3	4	5	6	7	8
1. Member of company A								
2. Member of company B	−.35***							
3. Member of company C	−.30*	−.37**						
4. Output functional experience	−.36***	.07	.21*					
5. Non-Hungarian	.09	−.03	−.11	.27**				
6. Age	.17	−.00	.02	.16†	.16†			
7. Top level	.22*	−.23*	−.09	.15†	.39***	.20†		
8. Close to cluster 1	−.04	.12	.00	.24*	.34**	−.22*	.08	
9. Close to cluster 2	−.04	.19†	.07	−.05	−.10	.27*	.04	.03

[a] $N = 91$. Descriptive statistics are in Table 1, except for the distances from the cluster centers, which have means of .89 and .68 and s.d.'s of .11 and .16 for clusters 1 and 2, respectively.

† $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$

First, output functional background and non-Hungarian nationality positively correlated with similarity to cluster center 1. This preliminary result is partially consistent with Hypotheses 1 and 4, which link functional background and nationality to beliefs.

Second, age correlated negatively with similarity to cluster center 1 and positively with similarity to cluster center 2. This preliminary result is consistent with Hypothesis 2, predicting that age is related to beliefs. This result indicates that the younger managers were closer to cluster center 1 and the older managers were closer to cluster center 2.

Third, there were strong negative correlations among the causal maps of managers who worked for different organizations. This finding, which is consistent with the prediction that organizational membership affects beliefs, justifies including organizational membership as a control variable in further analyses.

Table 3 presents regression results. Hierarchical regression analyses were employed so that the effect of company membership could be eliminated. Separate regression analyses were calculated for similarity to cluster center 1 and to cluster center 2 as the respective dependent variables. None of the correlations among the variables had an absolute value greater than .70, so I was not concerned with multicollinearity (Tabachnick & Fidell, 1989). In step 1, measures of similarity to the center of cluster 1 (for short, cluster center 1) were regressed on the control variables. No significant effect was found, which indicates that the control variables have no significant

TABLE 3
Results of Regression Analyses for the Whole Sample[a]

	Cluster Center 1		Cluster Center 2	
Variable	β	s.e.	β	s.e.
Step 1: Control variables				
Company A member	.04	.03	.15	.03
Company B member	.15	.03	.32*	.04
Company C member	.07	.03	.23†	.05
R^2	.02		.07	
Adjusted R^2	−.02		.04	
Step 2: Independent variables				
Age	−.10	.00	.26*	.00
Non-Hungarian	.36**	.03	−.03	.04
Top level	−.18	.03	−.02	.04
Output function	.19	.03	−.03	.04
ΔR^2	.20**		.06†	
Δ Adjusted R^2	.17		.02	

[a] $N = 91$.
† $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$

effect on the similarity of causal maps to cluster center 1. In step 2, cluster center 1 was regressed on the individual characteristics. The beta values indicate that the causal maps of those with non-Hungarian nationality (β = 0.36, $p < .01$) and an output functional background (β = 0.19, $p < .10$) are close to cluster center 1. This result provides partial support for Hypotheses 1 and 4, which link functional background and nationality to beliefs. The increase in the regression coefficient was significant ($F = 3.34$, $p < .01$).

Similarly, cluster center 2 was regressed on the control variables and individual characteristics through two steps as well. In step 1, cluster 2 was regressed on the control variables. The beta values indicate that the causal maps of managers who worked for company B ($\beta = 0.32$, $p < .05$) and company C ($\beta = 0.23$, $p < .10$) are close to cluster center 2, which indicates that company membership affects the beliefs of managers. In step 2, cluster center 2 was regressed on the individual characteristics. The beta values indicate that the causal maps of older managers ($\beta = 0.26$, $p < .05$) were close to cluster center 2. This result provides partial support for Hypothesis 2, which links age to beliefs. The increase in the regression coefficient was marginally significant ($F = 1.87$, $p < .10$), and the variation in individual beliefs explained by age was 2.3 percent (change in adjusted R^2).

A Control Analysis

Because the dependent variables (similarity to cluster center 1 and cluster center 2) may have been sensitive to some of the limitations of cluster analysis and the calculation of the cluster centers, I ran control statistical analyses that relied on neither the central maps nor the clusters. I used *t*-tests for the control analysis presented in Table 4.

Because I started with distance data, the steps were once again complex. First, I selected a subgroup of managers who shared one characteristic (e.g.,

TABLE 4
Results of *t*-Tests for the Whole Sample[a]

Subgroup	N_w	N_a	$\bar{x}_w$	$\bar{x}_a$	σ_w	σ_a	t
Output function	210	1,470	.70	.77	.15	.14	6.75
Non-Hungarian	406	1,798	.76	.78	.15	.14	2.35
Hungarian	1,891	1,798	.78	.78	.14	.14	0.91
Non–top level	1,711	1,888	.78	.78	.14	.14	0.21
Top level	496	1,888	.79	.78	.13	.14	–1.10
Throughput function	3,360	1,470	.80	.77	.13	.14	–6.24
Company A	190	1,489	.78	.81	.14	.13	3.10
Company B	351	1,728	.73	.77	.15	.14	5.09
Company C	231	1,518	.74	.78	.14	.14	3.43
Company D	231	1,518	.80	.80	.13	.13	–0.74

[a] N_w is the number of distances between the maps within subgroups; N_a is the number of distances across subgroups; $\bar{x}_w$ is the mean distance between maps within subgroups; $\bar{x}_a$ is the mean distance across subgroups; σ_w is the estimated standard deviation within subgroups; and σ_a is the estimated standard deviation across subgroups.

Hungarian nationality) and calculated the average distances and standard deviations of the causal maps of these managers (i.e., within-subgroup average $\bar{x}_w$ and σ_w). Next, I calculated average distances and standard deviations of the causal maps of the managers within and outside of the subgroup (across-subgroup average $\bar{x}_a$ and σ_a). For Hungarian managers, $\bar{x}_a$ is the average of the distances between all pairs of managers p and q, with p Hungarian and q non-Hungarian. These steps were repeated for each individual characteristic originally coded into a binary variable. This calculation was not performed for age as it was coded as a continuous variable. I then calculated t-test results for each subgroup considering the within- and across-subgroup averages and standard deviations. Because the t-tests are based on distance data, it is impossible to infer probabilities from them, but consistency can be sought between the larger t-values and the corresponding regression results. All the discrete variables found to be linked to individual beliefs in the regression analysis—output functional background ($t = 6.75$), non-Hungarian nationality ($t = 2.35$), and membership in companies B and C ($t = 5.09$ and 3.43, respectively)—also had relatively high t-values. This consistency indicates that the limitations of cluster analysis and the calculation of the central maps did not highly distort the regression analysis. For a more detailed discussion of both the cluster center technique and the t-test for distances, the reader is referred to Markóczy and Goldberg (1995).

DISCUSSION

The results of this study indicate a partial relationship between three of the four investigated individual characteristics and the measured individual beliefs. Output functional background, age, and non-Hungarian nationality each seemed to be related to individual beliefs. Organizational membership also affected these beliefs. No such relationship was found for the throughput functional background, Hungarian nationality, or hierarchical position. The measured individual characteristics in total accounted for 17.2 percent (change in adjusted R^2) of the similarity to one of the belief-based clusters.

Can such partial results provide empirical support for the substitutability suggestion? Hambrick and Mason (1984) and their followers would probably consider these findings as providing such support, given that they have thus considered similar positive findings. They have never denied that individual characteristics are "rough surrogates" (Michel & Hambrick, 1992: 16) that "contain more noise than purer psychological measures" (Hambrick & Mason, 1984: 196). But they have suggested that the field should accept such rough surrogates, considering "the advantages of objectivity, parsimony and possible replication" (Michel & Hambrick, 1992: 16) and implying the advantage of easy access and measurability against the "unobservable, impracticable to measure directly" (Michel & Hambrick, 1992: 16) construct of individual cognition. Neither Hambrick and Mason nor Michel and Hambrick, however, defined the level of roughness that is acceptable in such a substitution.

Is the "rough" explanatory power of individual characteristics an acceptable exchange for easily measurable objective variables? I believe that it is not. First, a good substitute should be extremely closely correlated to the object it is replacing. People accept without much hesitation that the response to the question "How tall are you?" is a good substitute for actually measuring height for many purposes. Stretching the notion of substitution a bit, a sugar substitute people would judge to taste 17.2 percent like sugar on a rating scale would not be considered a substitute at all.

The second criterion is whether the substitute buys a researcher a great deal of convenience. Constructs like cognitive base, heuristics, and cognitive model are very difficult to grasp. But most studies that make reference to such notions do not really need to measure them at all. Instead, the more accessible notions of beliefs, attitudes, and propensities seem to be involved. If this is so, then the argument for the convenience of the substitute is substantially weakened. Although not as convenient as external characteristics, beliefs, attitudes, and propensities can be measured fairly directly and often through relatively traditional means as well as by the method (causal maps) used in this study. Furthermore, various relevant cognitive aspects on which individuals might differ (e.g., risk aversion) are also measurable, and tools have been developed and used for measuring them (e.g., Ireland et al., 1987; Porac, Thomas, Wilson, Paton, & Kanfer, 1995; Thomas, Shankster, & Mathieu, 1994). When researchers recognize that they only need to be interested in these more measurable constructs rather than in the more abstract constructs like cognitive base, it becomes clear that the convenience gained with the substitute measure is not nearly as great as it first appeared to be.

The following—artificial—example might help clarify these two points. Levine (1993) found a relationship between wage differences and workplace attitudes. Would we accept wage differences as substitute measures for workplace attitudes? The relationship has been found, and the former measures are objective, parsimonious, and replicable. But is that enough? Probably not. The relationship exists but is not overwhelming, and there are several valid measures available for measuring workplace attitudes. A balance must be struck between convenience and the closeness of a substitute. In this example it is clear that the convenience gains do not come close to compensating for the measurement loss.

What holds true for the example also holds true for individual characteristics as substitutes for beliefs. There is a substantial loss in the measurement, and the gain of convenience is not as great as it first appears to be. Researchers should determine what it is that they want to measure and continue to develop and refine tools for doing so instead of relying on convenient substitutes that may turn out to be neither particularly good substitutes nor extremely convenient ones.

REFERENCES

Barry, H., & Child, I. 1957. A cross-cultural survey of some sex differences in socialization. *Journal of Abnormal and Social Psychology*, 55: 327–332.

Bem, D. J. 1970. ***Beliefs, attitudes and human affairs.*** Belmont, CA: Brooks/Cole.

Buchholtz, A. K., & Ribbens, B. A. 1994. Role of chief executive officers in takeover resistance: Effects of CEO incentives and individual characteristics. ***Academy of Management Journal,*** 37: 554–579.

Child, J. 1972. Organizational structure, environment and performance: The role of strategic choice. ***Sociology,*** 6: 2–22.

Child, J., & Markóczy, L. 1993. Host-country managerial behavior and learning in Chinese and Hungarian joint ventures. ***Journal of Management Studies,*** 30: 611–631.

Child, J., Markóczy, L., & Cheung, T. 1994. Managerial adaptation in Chinese and Hungarian strategic alliances with culturally distinct partners. In S. Stewart (Ed.), ***Advances in Chinese industrial studies,*** vol. 4: ***Joint ventures in the People's Republic of China:*** 211–231. Greenwich, CT: JAI Press.

Cohen, J., & Cohen, P. 1983. ***Applied multiple regression/correlation analysis for the behavioral sciences.*** Hillsdale, NJ: Erlbaum.

Dearborn, D. C., & Simon, H. A. 1958. Selective perception: A note on the department identification of executives. ***Sociometry,*** 21: 140–144.

Dutton, J. E., & Jackson, S. E. 1987. Categorizing strategic issues: Links to organizational action. ***Academy of Management Review,*** 12: 76–90.

Dutton, J. E., Walton, E. J., & Abrahamson, E. 1989. Important dimensions of strategic issues: Separating the wheat from the chaff. ***Journal of Management Studies,*** 26: 379–396.

Everitt, B. 1990. ***Cluster analysis*** (2nd ed.). New York: Halsted Press.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. ***Academy of Management Review,*** 9: 193–206.

Hitt, M. A., & Tyler, B. B. 1991. Strategic decision models: Integrating different perspectives. ***Strategic Management Journal,*** 12: 327–351.

Hofstede, G. 1991. ***Culture and organizations: Software of the mind.*** New York: McGraw-Hill.

Ireland, D. R., Hitt, M. A., Bettis, R. A., & de Porras, D. A. 1987. Strategy formulation processes: Differences in perceptions of strengths and weaknesses indicators and environmental uncertainty by managerial level. ***Strategic Management Journal,*** 8: 469–485.

Lambert, W. E., Hamers, J., & Frasure-Smith, N. 1979. ***Child rearing values.*** New York: Praeger.

Langfield-Smith, K. M., & Wirth, A. 1992. Measuring differences between cognitive maps. ***Journal of the Operational Research Society,*** 43: 1135–1150.

Levine, D. L. 1993. What do wages buy? ***Administrative Science Quarterly,*** 38: 462–483.

March, J. G., & Simon, H. 1958. ***Organizations.*** New York: Wiley.

Markóczy, L. 1995. States and belief states. ***International Journal of Human Resource Management,*** 6: 249–270.

Markóczy, L., & Goldberg, J. 1995. A method for eliciting and comparing causal maps. ***Journal of Management,*** 21: 305–333.

Michel, J. G., & Hambrick, D. C. 1992. Diversification posture and top management team characteristics. ***Academy of Management Journal,*** 35: 9–37.

Moser, P. K. 1995. Epistemology. In R. Audi (Ed.), ***The Cambridge dictionary of philosophy:*** 233–238. Cambridge: Cambridge University Press.

Nelson, R. R., & Winter, S. G. 1982. ***An evolutionary theory of economic change.*** Cambridge, MA: Harvard University Press.

Pfeffer, J. 1983. Organizational demography. In L. L. Cummings & B. M. Staw (Eds.), ***Research in organizational behavior,*** vol. 5: 299–357. Greenwich, CT: JAI Press.

Porac, J. F., Thomas, H., Wilson, F., Paton, D., & Kanfer, A. 1995. Rivalry and the industry model of Scottish knitwear producers. ***Administrative Science Quarterly,*** 40: 203–229.

Rhodes, S. 1983. Age-related differences in work attitudes and behavior: A review and conceptual analysis. ***Psychological Bulletin,*** 93: 328–367.

Schein, E. H. 1985. ***Organizational culture and leadership.*** San Francisco: Jossey-Bass.

Schuman, H., & Scott, J. 1989. Generations and collective memories. ***American Sociological Review,*** 54: 359–381.

Silverman, D. 1970. ***The theory of organizations.*** London: Heinemann.

Simon, H. A. 1948. ***Administrative behavior.*** New York: Macmillan.

Srivastva, S. 1983. ***The executive mind.*** San Francisco: Jossey-Bass.

Tabachnick, B. G., & Fidell, L. S. 1989. ***Using multivariate statistics.*** New York: HarperCollins.

Thomas, J. B., Shankster, L. J., & Mathieu, J. E. 1994. Antecedents to organizational issue interpretation: The roles of single-level, cross-level, and content cues. ***Academy of Management Journal,*** 37: 1252–1284.

Waller, M. J., Huber, G. P., & Glick, W. H. 1995. Functional background as a determinant of executives' selective perception. ***Academy of Management Journal,*** 38: 943–974.

Walsh, J. P. 1988. Selectivity and selective perception: An investigation of managers' belief structures and information processing. ***Academy of Management Journal,*** 31: 873–896.

Weeks, W. H., Pedersen, P. B., & Brislin, R. W. 1982. ***A manual of structured experiences for cross-cultural learning.*** Chicago: Intercultural Press.

Weick, K. E. 1979. ***The social psychology of organizing*** (2nd ed.). Reading, MA: Addison-Wesley.

Wiersema, M. F., & Bantel, K. A. 1992. Top management team demography and corporate strategic change. ***Academy of Management Journal,*** 35: 91–121.

Wiersema, M. F., & Bird, A. 1993. Organizational demography in Japanese firms: Group heterogeneity, individual dissimilarity, and top management team turnover. ***Academy of Management Journal,*** 36: 996–1025.

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FURTHER REMARKS ON RETROSPECTIVE ACCOUNTS IN ORGANIZATIONAL AND STRATEGIC MANAGEMENT RESEARCH

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Miller, Cardinal, and Glick (1997) challenged the conclusions in Golden (1992b), which examined the use of retrospective data in strategic management research. Further, the authors suggest that my findings have led many other researchers to avoid the use of retrospective data. The present note suggests recent researchers have not entirely avoided retrospective data but have perhaps added precautions when using such data. I also suggest that Miller and colleagues did not fully represent important aspects of my research and inappropriately compare my study with others.

In earlier research (Golden, 1992b), I attempted to address two questions in the study of strategic and organizational change: (1) To what extent do CEOs accurately recall and report their firms' past strategies? and (2) Under what conditions are retrospective accounts the most and the least accurate? These questions were viewed as important since retrospective data, frequently the only data available to researchers interested in past strategy, are frequently used, and compelling theory-based arguments in the psychology and organizations literatures suggest that these data may be subject to significant biases. In general, my earlier study concluded that "the use of retrospective accounts in management research needs to be seriously questioned" (Golden, 1992b: 857). Further, it began to identify the specific conditions under which the use of retrospective data may be the most and the least appropriate. These findings and conclusions have recently been challenged by Miller, Cardinal, and Glick (1997), who attempted to show that my study has perhaps been "overinterpreted" by others. In pursuit of their goal, however, I believe they have not accurately characterized certain aspects of my research and how it has been interpreted. Thus, I suggest in the following pages that despite the contribution their paper makes, several (though not all) of their criticisms of my earlier study are questionable. My discussion begins with a brief summary of my earlier conclusions and how they seem to have impacted subsequent research. A response to several concerns raised by Miller and colleagues follows, and I conclude with comments about future research that may rely on retrospective accounts.

THE IMPACT OF "THE PAST IS THE PAST—OR IS IT?"

Berger and Luckman suggested that a sociology of knowledge must address not only the empirical reality of knowledge in human societies, but

also "the processes by which any body of 'knowledge' comes to be socially established as reality" (Berger & Luckman, 1966: 3). With this idea in mind, I must acknowledge the possibility that my intended message in Golden (1992b) was not interpreted by readers completely as I had hoped it would be. This seems to be a fundamental concern of Miller, Cardinal, and Glick (1997), who suggested that the "reality" of my earlier study may have been interpreted as a call for universal prohibition of retrospective data. In particular, Miller and colleagues suggested that I characterized retrospective reports as dangerous and to be avoided or treated with extreme caution. Although I did take the strong position that these data are subject to substantial error under certain conditions, my purpose was to investigate when retrospective data would likely be the most and the least valid.

Specifically, Golden (1992b) examined the correspondence between two measures of strategy obtained by the CEOs of 259 hospitals. The time 1 measure categorized the hospitals' strategies using the familiar Miles and Snow (1978) typology. Hambrick (1981), Snow and Hrebiniak (1980), and Zajac and Shortell (1989) all adopted this measure, and Shortell and Zajac (1990) validated it in a study published in this journal. Two years after the initial strategy measure was obtained (i.e., at time 2), the CEOs who had reported their hospitals' strategies two years earlier (at time 1) were asked to categorize those past strategies. In theory, the "retrospective measure" obtained at time 2 could only be considered valid if it was reliable. And this measure could only be considered reliable if there was generally strong correspondence between the time 1 and time 2 categorizations, which were measures of the same organizational phenomenon (the time 1 strategies). From my analysis, I concluded that "retrospective errors may be pervasive; nearly 60 percent of the retrospective accounts studied here did not agree with validated reports elicited only two years earlier" (Golden, 1992b: 852).

In a second stage of my analysis, I investigated whether the retrospective errors occurred systematically or randomly. Drawing on a well-established literature on the presentation of self (Feldman & March, 1981; Salancik & Meindl, 1984), people's subconscious attempts to maintain self-esteem (Nisbett & Wilson, 1977), and hindsight biases (Fischhoff & Beyth, 1975), I examined the theoretically predictable correlates of disagreements between the time 1 and time 2 accounts. Several of my theory-based predictions were supported, thus suggesting that the disagreements between the time 1 and time 2 accounts were due to systematic retrospective errors. Ironically, my findings were generally consistent with subsequently published remarks of two of the three authors of Miller et al. (1997). They too recognized the potential weakness of retrospective data. Specifically, Glick and his colleagues, in their discussion of open-ended retrospective accounts, noted this:

> A second disadvantage of asking open-ended questions about recent changes is that the responses may be associated with errors of recall, e.g., informants may selectively neglect some

> events that are important or focus on trends that are actually unimportant but temporarily conspicuous to the informant. . . . Errors of recall can result from strong cognitive processes such as rationalization, self-presentation, simplification, attribution, or simple lapses of memory (Glick, Huber, Miller, Doty, & Sutcliffe, 1990: 302).

In my recent attempt to understand the socially constructed reality that has emerged around my earlier research, I examined each of the approximately 20 manuscripts that cited Golden (1992b) in the years 1993 to 1995, inclusive. My goal was to determine whether my conclusions had been interpreted as an unequivocal criticism of retrospective data. To my relief, my conclusions seem to have been interpreted as I intended them to be; in general, and as a consequence of my findings, others seem to have taken added precautions when using retrospective data. Although a full review of these publications is beyond the scope of the present discussion, several of them illustrate the influence of my 1992 work. For example, Hambrick and Abrahamson (1995) avoided the potential for self-serving retrospective biases by obtaining data from industry experts. Phan and Hill (1995) recognized the possiblity of retrospective errors in their study and adapted their research by accessing data from multiple informants. Brockner and his coauthors (Brockner, Konovsky, Cooper-Schneider, Folger, Martin, & Bies, 1995) suggested, in view of my findings, that their research would have been subject to measurement errors attributable to self-serving biases and recall errors had it not been for their additional precautions. In order to strengthen their confidence in their retrospective data, these authors collected other, nonretrospective data as well. And in a final illustration, Chen, Farth, and MacMillan (1993) altered the structure of their data collection in order to minimize the likelihood that the CEOs in their survey would provide self-serving retrospective accounts.

My review of the published works that have cited Golden (1992b) has led me to an interesting, though tentative, conclusion. Each author or set of authors, having cited my findings and cautions about the use of retrospective data, nevertheless presented research using retrospective data. However, all of these authors took precautions against retrospective biases and errors (e.g., using multiple informants, informants who did not have personal stakes in the phenomena under study, and multiple data sources and types) in order to validate their retrospective measures. As a consequence, these authors ruled out some potential alternative explanations for their findings (e.g., self-serving presentations) and thus made more compelling cases for the integrity of their studies. Of course, it is also possible that other researchers have not been able to implement such extra precautions. One may then ask how much research has not been conducted (or published) because of the cautions articulated in Golden (1992b). The answer to this question is largely unknowable. However, it seems that if researchers chose not to conduct research because of their judgments that their retrospective data would be flawed or could not be validated, then they may have chosen wisely. And if

reviewers and editors chose not to publish a particular study because of such concerns, it would seem that the design of the research raised these concerns—though possible weaknesses were perhaps made more salient by the publication of my findings.

A RESPONSE TO MILLER, CARDINAL, AND GLICK

Miller and colleagues (1997), in their critique of my research, raised issues that necessitate a direct response. These issues concern what these authors referred to as my use of an "overly pessimistic statistic" to assess accuracy, use of a weak strategy measure, and failure to separate unreliability (i.e., measurement error) from systematic informant fallibility. I address these interrelated issues in this section.

A primary concern of Miller et al. (1997) is that the contemporaneous strategy measure used in Golden (1992b)—the measure of time 1 strategy elicited at time 1—was of questionable reliability and validity. This is a critical issue since, if the contemporaneous measure was of dubious quality, one cannot conclude that the inconsistency between the time 1 measure and the retrospective time 2 measure was largely (although not entirely) due to retrospective errors. To make this argument, I relied on the validation efforts of Shortell and Zajac (1990). Using archival data to validate their measure of the Miles and Snow (1978) strategy types, they found support for 24 of their 26 tests of discriminant validity. Each of their predictions was based on the theoretical propositions Miles and Snow (1978) suggested. Since I drew my sample of hospitals from the Shortell and Zajac data set, and since I used the same measure as those authors, I suggested that the disagreements between the time 1 and time 2 measures were largely due to retrospective errors. In addition, I conducted validation tests of the retrospective measure (see footnote 2, Golden [1992b]). As predicted, validity could not be established for the retrospective measure but, as in Shortell and Zajac (1990), it could be established for the contemporaneous measure.

Miller and colleagues did not adequately describe the efforts Shortell and Zajac took to establish the validity of the Miles and Snow measure. First, Miller et al. indicated that "24 out of 25 convergent validity coefficients were significant or approaching significance" (1997: 192).[1] This characterization is misleading since the reader cannot determine how many of the 26 tests were statistically significant at commonly acceptable levels. In fact, 22 of the 26 predictions were supported at the .05 level or better, and 3 of the 26 were supported at the .10 level; all were in the predicted direction. Miller, Cardinal, and Glick also did not indicate the breadth of Shortell and Zajac's validation efforts. Specifically, they did not report that Shortell and Zajac relied not only on perceptual, self-report data, but also on multifaceted archival data examining product development activities, market research intensity, and administrative activities, among other possible reflections of the

[1] Miller et al. erroneously referred to 25 coefficients, but Shortell and Zajac refer to 26.

Miles and Snow types. It should also be noted that this measure and these data have been used in other peer-reviewed, published manuscripts (cf. Golden, 1992a; Veliyath & Shortell, 1993; Zajac & Shortell, 1989). The contemporaneous strategy measure in these studies was statistically associated with the predicted independent or dependent variables. If this measure and these data were unacceptably "weak," as Miller et al. suggested they were, then it is difficult to explain support for the theory-based predictions of these authors. Lastly, Miller and colleagues reported the questionable test-retest reliability results reported in Shortell and Zajac. However, Miller et al. failed to indicate that the intertemporal reliability tests of Shortell and Zajac were not intended to be conclusive. In contrast to Shortell and Zajac's extensive validation efforts, which were conducted with a sample of over 400 CEOs, their preliminary test-retest analysis for intertemporal reliability was based on phone interviews with only 19 CEOs—approximately 4 percent of the full sample. Thus, readers must be cautious about interpreting Miller and colleagues' conclusion that this test-retest result indicates weak reliability.

In an effort to directly critique my findings, Miller, Cardinal, and Glick (1997) also raised the possibility that a sizable proportion of the disagreements between the time 1 and 2 measures I observed may have been due to chance rather than to systematic error. Certainly this may partially explain my findings. In order to address this possibility, Miller and colleagues conducted a form of sensitivity analysis. In doing so, they calculated the agreement coefficient for the time 1 and 2 measures to be .42. These data implied that I had concluded insufficient agreement. After making appropriate adjustments for the possiblity of chance agreement (using the four-category strategy typology of prospector, analyzer, defender, and reactor), Miller et al. calculated a new agreement coefficient of .48—a value still below conventional standards of agreement. Even after the reactor category was omitted from their reanalysis, their agreement coefficient only increased to .53; had I earlier omitted this strategy category, the comparable figure for my study would have been .47. Although Miller et al. may have rightly concluded that adjusting for chance agreement improves one's confidence in these retrospective reports, the improvement does not appear sufficient to conclude that most of the mismatches were the result of chance.

Further, and of greatest concern, Miller and colleagues (1997) attempted to challenge my conclusions indirectly by using questionable comparisons to other studies. Central to their criticisms was their examination of the unpublished doctoral dissertation of Fox (1992).[2] Fox collected both retrospective and nonretrospective data using a strategy measure developed by Glick et al. (1990). Reinterpreting Fox's data, Miller and coauthors reported that CEO rater reliability in her study was "remarkably similar for both retrospective and nonretrospective reports. . . . Contrary to arguments about retrospective error, CEO rater reliability was not even slightly lower for

[2] I was unsuccessful in reaching Fox in an effort to receive a copy of her dissertation.

retrospective reports than for nonretrospective reports (Miller et al., 1997: 197–198). From their reanalysis of Fox's (1992) data, these authors concluded that "this finding clearly suggests that most of the error in the Golden study was caused not by faulty retrospective thinking but by the measure itself" (Miller et al., 1997: 198).

Fox's (1992) methodology and sample differ substantially from that in Golden (1992b), and thus, the Fox study cannot inform us about my earlier research. First, my study examined the retrospective reports of CEOs and elicited data about their own organizations. Fox (1992) collected data from 31 financial and banking experts in a small metropolitan community. Only 4 of these 31 raters were bank employees (1 CEO and 3 senior officers); 3 raters were professors at a local university. The choice of these raters makes comparisons to Golden (1992b) inappropriate. Specifically, I argued in the 1992 publication that self-serving biases and efforts to present a positive self-image would lead CEOs to distort accounts of past strategy contingent on, among other things, past firm performance—for instance, CEOs of poorly performing firms would be most likely to distort accounts of past strategy. Since only 4 of Fox's 31 raters might be considered to have had roles in a bank's strategy, her sample does not allow for comparisons with Golden (1992b).

Second, Fox (1992) relied on a strategy measure that differed substantially from mine, which was a single, validated, seven-item scale. As in previous published research, the four Miles and Snow (1978) strategy types were arrayed along a continuum, with defender at one end and prospector at the other. In contrast, Fox's (1992) measure was based on four 7-point scales that indicated the extent to which each of the banks exhibited characteristics of each of the Miles and Snow (1978) four strategic types. Without questioning the validity of this technique, I suggest that the differences between the Fox (1992) and Golden (1992b) strategy measures are so great as to make them incomparable.

Third, Miller, Cardinal, and Glick (1997) relied on the questionable logic that since *both* of Fox's (1992) measures exhibited equally low reliability, it is therefore appropriate to conclude that the low reliability of the retrospective measure was not due to systematic biases or more generally, to the time elapsed between measurements. However, in contrast to Golden (1992b), in which the validity of the contemporaneous strategy measure had been validated, Fox (1992) did not establish the validity of the contemporaneous strategy measure. Overall, then, the reanalysis of the Fox data and the comparison with my study could only have been appropriate if three conditions had been met: (1) if Fox had employed a strategy measure similar to mine (it was substantially different); (2) if similar informants were relied upon (Fox's informants were substantially different, and would not have been likely to make the kinds of retrospective errors I predicted for my informants); and (3) if either of Fox's two measures exhibited acceptable validity according to conventional standards (neither did, as Miller et al. indicated).

In addition to examining Fox's (1992) dissertation, Miller and coauthors made several other questionable comparisons between my study and others. In an effort to justify these comparisons, they indicated that "these studies used the same *basic measure* of strategy as Golden (1992) and raters who seem to have been knowledgeable about the focal organizations, and they assessed current, not retrospective, strategy" (Miller et al., 1997: 194; emphasis added). However, their characterization of these other studies is inaccurate; in fact, numerous substantive differences between my study and those they cited make comparisons inappropriate. For instance, unlike my study, Meyer (1979) collected strategy data from industry experts, not hospital CEOs. The problem with comparing expert informants to CEO informants was discussed above. In short, I would not expect industry experts to be subject to the retrospective biases I predicted in Golden (1992b), and thus, this cross-study comparison is misleading.

The comparison with Coleman (1978) is also inappropriate. Coleman obtained an interrater agreement measure of only 39 percent. However, his respondents also differed substantially from those used in my study. In Golden (1992b), I relied on each CEO to report his or her own firm's strategy; in contrast, Coleman elicited CEOs' ratings of *other firms.* For instance, he examined the level of agreement between CEO A's rating of hospital C's strategy and CEO B's rating of hospital C's strategy. Because it was not established that CEO A and CEO B ought to be able to reliably and validly report the strategy of hospital C, and because Coleman's measure differs dramatically from that in Golden (1992b), comparisons with my findings are not justified.

The comparison of Hambrick (1981) with Golden (1992b) is similarly misleading. Hambrick, who conducted his research in three industries, reported a concordance coefficient of .76 for the hospital industry—one of the industries initially studied by Miles and Snow (1978) when they formulated their strategy typology. Miller and colleagues did not report this concordance coefficient. Instead, they reported a concordance coefficient of .65, which is the average concordance coefficient obtained from the three industry studies. Miller et al. failed to indicate, however, that the concordance coefficient for the college "industry" reached only .49 and that Hambrick himself noted that it might not be appropriate to apply the Miles and Snow typology to colleges. Thus, it seems that had they contrasted Hambrick's results for only the hospital industry to those of my sample organizations, which were also in the hospital industry, Miller and colleagues (1997) might have come to a more positive characterization of my strategy measure. Finally, a fourth study Miller et al. used for comparison purposes employed a 20-item strategy measure (Conant, Mokwa, & Varadarajan, 1990). Not only is it problematic to draw comparisons between single- and multi-item meaures, but also, Conant and his colleagues elicited their data from marketing directors, not CEOs. Hambrick (1981) earlier found that CEOs tended to provide the most valid accounts of their firms' strategies.

FINAL COMMENTS

Miller, Cardinal, and Glick (1997) sought to critique Golden (1992b) in part by way of indirect comparisons with other studies. A more direct approach, and an attractive model for the organizational sciences, can be seen in Latham, Erez, and Locke (1988), which documents conflicts between the conclusions of Latham's (1992) research on goal setting and those of Erez (e.g., Erez & Arad, 1986). Rather than searching for flaws in each other's research, Latham and Erez pursued the constructivism approach to theory building suggested by McGuire (1980). With Locke serving as a mediator, Latham and Erez conducted a series of experiments explicitly designed to reconcile their conflicting findings and conclusions. In his commentary about the process, Locke noted the substantial effects on findings and conclusions of subtle procedural and design differences among past goal-setting studies (Latham, 1992). As a consequence of their approach, Latham and colleagues were able to better identify boundary conditions of goal-setting theory and, more generally, to provide the field with a "relatively sane way of resolving a scientific dispute" (Latham, 1992: 153). In light of these observations and my remarks above, the approach presented by Latham et al. (1988) appears to offer a most constructive and convincing mode of debate in the organizational sciences.

Future research that indicates under what conditions retrospective data can be used should be designed. In addition, future researchers may also benefit from research such as the work by Mantwill, Kohnken, and Aschermann (1995), who discussed "investigative interviewing" techniques developed in the field of eyewitness psychology. The premise of this form of "cognitive interview" is that recall problems are not necessarily caused by loss of information, but rather, are often caused by inaccessibility, which can be overcome. Bergh (1993) also provided an important discussion of predictable time-induced effects in management research. And Mitchell and Thompson (1994) presented a model for improving recall of past "events" by focusing on "aspects"—for instance, weather, fish, and food are aspects of a fishing event. An analogue in strategic management research would be examination of aspects, such as downsizing, outsourcing, resource allocations, marketing programs, and mergers and acquisitions, that comprise the strategy of a firm.

In conclusion, it is important to note that Miller, Cardinal, and Glick (1997) is limited in scope to questioning Golden's (1992b) conclusions and does not provide positive support for the use of retrospective data. And interestingly, Golden (1992b) and Miller et al. (1997) ultimately converge, both making the same point—that, under certain specifiable conditions, retrospective data may be used in management research. To this end, Miller and colleagues offered several prescriptions about the use of data and their necessary validation, and these prescriptions are highly consistent with those presented by me and by others (cf. Huber & Power, 1985). These prescriptions are important, and given the substantial evidence in psychology

and management concerning the *potential* for retrospective biases and errors, they are hardly controversial. Thus, on the basis of my research as well as the recent findings of Miller and colleagues (1997), I maintain my suggestion that future researchers be critical of retrospective data. However, *if* significant efforts are made to minimize retrospective biases and error *and* these data can be validated, retrospective data may well provide unique access to past organizational events.

REFERENCES

Berger, P. L., & Luckman, T. 1966. ***The social construction of reality.*** New York: Doubleday.

Bergh, D. D. 1993. Don't "waste" your time: The effects of time series errors in management research. ***Journal of Management,*** 19: 897–914.

Brockner, J., Konovsky, M., Cooper-Schneider, R., Folger, R., Martin, C., & Bies, R. J. 1994. Interactive effects of procedural justice and outcome negativity on victims and survivors of job loss. ***Academy of Management Journal,*** 37: 397–409.

Chen, M., Farth, J., & MacMillan, I. C. 1993. An exploration of the expertness of outside informants. ***Academy of Management Journal,*** 36: 1614–1632.

Coleman, H. J. 1978. Interindustry comparisons of strategy: Electronics and food processing. In R. E. Miles & C. C. Snow, ***Organizational strategy, structure, and process:*** 193–213. New York: McGraw-Hill.

Conant, J. S., Mokwa, M. P., & Varadarajan, P. R. 1990. Strategic types, distinctive marketing competencies and organizational performance: A multiple measures-based study. ***Strategic Management Journal,*** 11: 365–383.

Erez, M., & Arad, A. 1986. Participative goals setting: Social, motivational and cognitive factors. ***Journal of Applied Psychology,*** 71: 591–592.

Feldman, M. S., & March, J. G. 1981. Information in organizations as signal and symbol. ***Administrative Science Quarterly,*** 26: 171–186.

Fischhoff, B., & Beyth, R. 1975. I knew it would happen: Remembered probabilities of once-future things. ***Organizational Behavior and Human Performance,*** 13: 1–16.

Fox, S. 1992. ***The institutional, organizational, and issue contexts of strategic issue processing: An exploratory study.*** Unpublished doctoral dissertation, Texas Tech University, Lubbock.

Glick, W. H., Huber, G. P., Miller, C. C., Doty, D. H., & Sutcliffe, K. M. 1990. Studying changes in organizational design and effectiveness: Retrospective event histories and periodic assessments. ***Organization Science,*** 1: 293–312.

Golden, B. R. 1992a. SBU strategy and SBU performance: The moderating role of the corporate-sbu relationship. ***Strategic Management Journal,*** 13: 145–158.

Golden, B. R. 1992b. The past is the past—Or is it? The use of retrospective accounts as indicators of past strategy. ***Academy of Management Journal,*** 35: 848–860.

Hambrick, D. C. 1981. Strategic awareness within top management teams. ***Strategic Management Journal,*** 2: 263–279.

Hambrick, D. C., & Abrahamson, E. 1995. Assessing managerial discretion across industries: A multimethod approach, ***Academy of Management Journal,*** 38: 1427–1441.

Huber, G. P., & Power, D. J. 1985. Retrospective reports of strategic level managers: Guidelines for increasing their accuracy. ***Strategic Management Journal,*** 6: 171–180.

Latham, G. P. 1992. Resolving a scientific dispute with Dr. Miriam Erez: Genesis, process,

outcome, and reflection. In P. Frost & R. Stablein (Eds.), ***Doing exemplary research:*** 146–154. Newbury Park, CA: Sage.

Latham, G. P., Erez, M., & Locke, E. A. 1988. Resolving scientific disputes by the joint design of crucial experiments by the antagonists: Application to the Erez-Latham dispute regarding participation in goal setting. ***Journal of Applied Psychology,*** 73: 753–772.

Mantwill, M., Kohnken, G., & Aschermann, E. 1995. Effects of the cognitive interview on the recall of familiar and unfamiliar events. ***Journal of Applied Psychology,*** 80: 68–78.

McGuire, W. J. 1980. The development of theory in social psychology. In R. Gilmour & S. Duck (Eds.), ***The development of social psychology:*** 53–80. New York: Academic Press.

Meyer, A. 1979. ***Hospital environment, strategy, and structure: The role of managerial perception and choice.*** Unpublished doctoral dissertation, University of California, Berkeley.

Miles, R., & Snow, C. 1978. ***Organizational strategy, structure, and process.*** New York: McGraw-Hill.

Miller, C. C., Cardinal, L. B., & Glick, W. H. 1997. Retrospective reports in organizational research: A reexamination of recent evidence. ***Academy of Management Journal,*** 40: 189–204.

Mitchell, T. R., & Thompson, L. 1994. A theory of temporal adjustments of the evaluation of events: Rosy prospection & rosy retrospection. In C. Stubbart, J. R. Meindl, & J. F. Porac (Eds.), ***Advances in managerial cognition and information processing,*** vol. 5: 85–114. Greenwich, CT: JAI Press.

Nisbett, R., & Wilson, T. D. 1977. Telling more than we can know: Verbal reports on mental processes. ***Psychological Review,*** 84: 231–259.

Phan, P. H., & Hill, C. W. L. 1995. Organizational restructuring and economic performance in leveraged buyouts: An ex post study. ***Academy of Management Journal,*** 38: 704–739.

Salancik, G. R., & Meindl, J. R. 1984. Corporate attributions as strategic illusions of management control. ***Administrative Science Quarterly,*** 29: 238–254.

Shortell, S. M., & Zajac, E. J. 1990. Perceptual and archival measures of Miles and Snow's strategic types: A comprehensive assessment of reliability and validity. ***Academy of Management Journal,*** 33: 817–832.

Snow, C. C., & Hrebiniak, L. G. 1980. Strategy distinctive competence, and organizational performance. ***Administrative Science Quarterly,*** 25: 317–335.

Veliyath, R., & Shortell, S. M. 1993. Strategic orientation, strategic planning system characteristics and performance. ***Journal of Management Studies,*** 30: 359–382.

Zajac, E. J., & Shortell, S. M. 1989. Changing generic strategies: Likelihood, direction, and performance implications. ***Strategic Management Journal,*** 10: 413–430.

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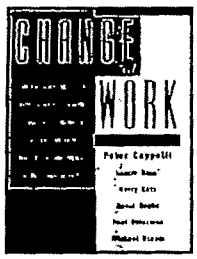

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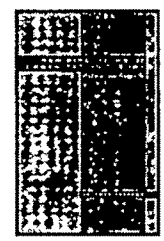

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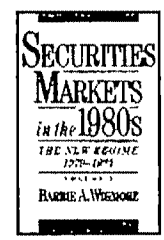

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SPECIAL RESEARCH FORUM CALL FOR PAPERS: THE MANAGEMENT OF ORGANIZATIONS IN THE NATURAL ENVIRONMENT

The *Academy of Management Journal* is pleased to announce a special research forum on the management of organizations in the natural environment. The guest editors will be Alfred Marcus, Mark Starik, and Anne Ilinitch.

During the past decade, ecological sustainability challenges—climate change, ozone depletion, toxic emissions, deforestation, and species extinction, among many others—have captured the attention of most societies and many organizations. Some scholars have asserted that interactions between these human constructions and the rest of the natural environment are among the most significant factors in the continued existence, development, and management of human organizations and societies. Although management scholars have conducted many studies focusing on the organization as the level of analysis, only recently have researchers begun to examine these interactions, often with the intention of advancing the general societal goal of sustainable interactions between organizations and the natural environment, whether that environment is the workplace, the community, or the global ecosystem. The urgency of and exact nature of this goal are still under debate, but the belief that ecological sustainability is necessary is widely held among these researchers, as is the conviction that human organizations can and should be managed in ways that contribute to this goal. A host of related issues have yet to be significantly and fully addressed. These include, but are not limited to, the following:

- How do organizations and their managers perceive the concept and practice of ecological sustainability? What are the sources and characteristics of these perceptions? How are these perceptions transmitted within and between organizations and organizational subdivisions? How are these perceptions of ecological sustainability related to perceptions of economic, organizational, and societal sustainability?
- How do organizations transform managers' ecological sustainability perceptions into values and attitudes? How do these values and attitudes vary across organizations and levels? How are they related to other organizational values and attitudes, and what is the result of these cross-value interactions? What ethical conflicts emerge in managing or in not managing for ecological sustainability?
- What is the relationship between values promoting sustainability and organizational strategies, structures, and systems? What are the antecedents, components, outcomes, and interactions of environmental strategy formulation and implementation? How do environmental values and attitudes relate to organizational innovation and entrepreneurship, information systems, and human resources management?
- What are the organizational and ecological outcomes of ecologically sustainable or unsustainable management practices? To what extent do these outcomes influence subsequent sustainability-oriented management behavior and perceptions? What is the relationship between ecological management performance and organizational financial performance and reputation?
- What are the temporal, cultural, and industry/sector aspects of ecologically sustainable or unsustainable management? What stakeholder and resource issues are involved? What is the role of interorganizational connections? How are ecologically sustainable management practices transferred among cultures, levels, and industries? What are the roles of international standards, institutions, and regimes in advancing or hampering the "greening" of organizations and societies around the world?

We welcome multiple empirical approaches involving either theory testing or development and both well-known and innovative viewpoints and encourage the advancement of both environmental management theory and practice. Holistic, integrative, and interdisciplinary analyses are also invited. Authors should follow *AMJ*'s February 1997 "Style Guide for Authors" in preparing manuscripts. Cover letters should request that manuscripts be specifically considered for this special research forum. Submit six copies (double-sided copies on recycled paper are preferred, but the title and abstract pages should be single-sided) to Anne S. Tsui, Editor, *Academy of Management Journal*, c/o Carolyn Haitsch, 861 Bedford Rd., Pleasantville, NY 10570-2799. All contributions should be received by May 15, 1998. For further information, contact Mark Starik, Department of Strategic Management and Public Policy, School of Business and Public Management, George Washington University, Washington, DC 20052; phone, 202-994-5621; fax, 202-994-8113; e-mail, starik@gwis2.circ.gwu.edu, or Alfred Marcus, University of Minnesota, Carlson School of Management, Minneapolis, MN 55415; phone, 612-624-2812; e-mail, amarcus@csom.umn.edu.

Volume 40, Number 6 December 1997

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P-87 (AMJ) 2

The Academy of Management

JOURNAL

Special Research Forum on Teaching Effectiveness in the Organizational Sciences

ticles

Teaching Effectiveness in the Organizational Sciences: Recognizing and Enhancing the Scholarship of Teaching
Peter J. Frost and Cynthia V. Fukami

Teaching Effectiveness in Technology-Mediated Distance Learning
Jane Webster and Peter Hackley

Using Information Technology to Add Value to Management Education
Maryam Alavi, Youngjin Yoo, and Douglas R. Vogel

Designing Effective Learning Systems for Management Education: Student Roles, Requisite Variety, and Practicing What We Teach
Cynthia A. Lengnick-Hall and Martha M. Sanders

The Social Fabric of a Team-Based M.B.A. Program: Network Effects on Student Satisfaction and Performance
Timothy T. Baldwin, Michael D. Bedell, and Jonathan L. Johnson

Fortieth Anniversary Section

rticles

Celebrating 40 Years of the *Academy of Management Journal*
Richard T. Mowday

Recollections of a Publishing Enthusiast
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The Academy of Management Takes Off
Stanley C. Vance

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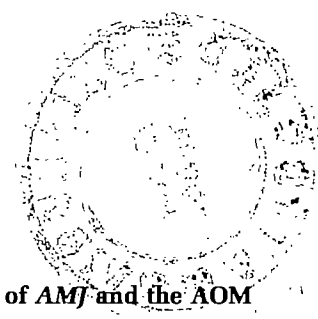
Angelo S. DeNisi



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In its articles, the *Journal* seeks to publish work that develops, tests, or advances management theory, research, and practice. Articles should have well-articulated and strong theoretical foundations. All types of empirical methods—quantitative, qualitative, or combinations—are acceptable. Exploratory survey research lacking a strong theoretical foundation, methodological studies, replications and extensions of past research, and commentaries with new empirical content are also of interest for publication as research notes if they make an important contribution to knowledge relevant to management. In addition, responses to or comments on articles previously published in the *Journal* may also be appropriate as research notes if they make an independent contribution to the literature.

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Submissions should be sent to Anne S. Tsui, Editor, % Carolyn Haitsch, Managing Editor, *Academy of Management Journal,* 861 Bedford Rd., Pleasantville, NY, 10570-2799.

Academy of Management JOURNAL

CONTENTS

Volume 40, Number 6, December 1997

From the Editor 1265

Acknowledgment of Reviewers 1267

Special Research Forum on Teaching Effectiveness in the Organizational Sciences

Teaching Effectiveness in the Organizational Sciences: Recognizing and Enhancing the Scholarship of Teaching
Peter J. Frost and Cynthia V. Fukami 1271

Teaching Effectiveness in Technology-Mediated Distance Learning
Jane Webster and Peter Hackley 1282

Using Information Technology to Add Value to Management Education
Maryam Alavi, Youngjin Yoo, and Douglas R. Vogel 1310

Designing Effective Learning Systems for Management Education: Student Roles, Requisite Variety, and Practicing What We Teach
Cynthia A. Lengnick-Hall and Martha M. Sanders 1334

The Social Fabric of a Team-Based M.B.A. Program: Network Effects on Student Satisfaction and Performance
Timothy T. Baldwin, Michael D. Bedell, and Jonathan L. Johnson .. 1369

Fortieth Anniversary Section

Past Editors 1399

Celebrating 40 Years of the *Academy of Management Journal*
Richard T. Mowday 1400

Recollections of a Publishing Enthusiast
Paul J. Gordon 1414

The Academy of Management Takes Off
Stanley C. Vance 1418

Participating in Profound Change
John B. Miner 1420

Unlearning to Learn
John W. Slocum, Jr. 1429

Reflections upon a Stage in the Maturation of *AMJ* and the AOM
Thomas A. Mahoney 1432

Building on Past Strengths with Incremental Change
Janice M. Beyer 1436

The Journal Editor as Well-Intentioned Steward
Richard T. Mowday 1442

The Maturation of the *Academy of Management Journal*
Michael A. Hitt 1450

Editing the *Academy of Management Journal:* A Very Recent Perspective
Angelo S. DeNisi 1456

Indexes for Volume 40 1461

Academy of Management Code of Ethical Conduct 1469

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FROM THE EDITOR

This issue marks the 40th anniversary of the *Academy of Management Journal.* As you probably have noticed from the cover of the *Journal,* this issue contains a special 40th Anniversary Section. In it, we offer you a glance into the *Journal*'s past and, through guest editor Rick Mowday's eyes, a glimpse into the future. Let me explain how this section came about. Soon after I agreed to assume the editorship of the *Journal* in early 1996, I realized that my first year of editorship (1997) would be the 40th anniversary of *AMJ.* I knew that we should do something special to celebrate this milestone. I also knew that time would not permit us to issue a special call for papers (it takes a minimum of two years from issuing a call to completion of reviews). I decided to ask Rick Mowday, who was the immediate past president of the Academy at that time, to spearhead this project. I wondered if he would agree to accept this project so soon after completing almost 9 years of service to the Academy (3.5 years as editor of *AMJ,* 5 years from program chair elect to president of the Academy). He accepted the assignment, much to my delight, though I am sure that he had many other, more interesting offers he could have accepted and hobbies he could have pursued. I have to think that it was his commitment to the Academy and to *AMJ* that convinced him rather than my persuasive skills. Rick's introduction to the anniversary section provides an informative and interesting overview of the development of the *Journal* over the past 40 years. The statements from the majority of our past editors that compose the special section offer insights into the challenges and accomplishments of the *Journal* throughout this period. I hope you will enjoy reading this special 40th Anniversary Section.

Also in this issue is the Special Research Forum on Teaching Effectiveness in the Organizational Sciences. We have four excellent pieces of research about various innovative teaching methods and classroom dynamics. This section is introduced by Peter Frost and Cindy Fukami. This is the second-to-last special research forum initiated by my predecessor, Angelo DeNisi. We can look forward to publication of the last forum developed under Angelo in early 1998. The topic of that forum is managerial compensation and firm performance, and it is guest-edited by Luis Gomez-Mejia and Harry Barkema.

The celebration of the success of the *Journal* would be incomplete without mentioning the hundreds of reviewers who have devoted many hours of their busy schedules to reviewing manuscripts. In each December issue, we offer our heartiest thanks to all the reviewers, especially the ad hoc reviewers who remained anonymous throughout the year. Collectively, they reviewed as many manuscripts as the Editorial Board members. I wish to thank those ad hoc reviewers who have contributed to the publication process from July

15, 1996, when I assumed responsibility for all new submissions, through October 15, 1997. A total of 468 ad hoc reviewers performed a total of 766 reviews in this 15-month period. Clearly, the *Journal* could not have been successful or even possible without the contribution of these dedicated ad hoc reviewers. We salute their service and thank them for their contributions. Their names are listed immediately following this statement.

In an effort to broaden the involvement of the 22 divisions and interest groups with the *Journal,* we try to have reviewers with expertise and interests that cover all the Academy's divisions and interest groups. To be sure that we are achieving this goal, we have prepared a table summarizing the areas of expertise of both our ad hoc reviewers and Editorial Board members, using the divisions and interest groups as categories. This table appears after the list of ad hoc reviewers. This distribution is quite similar to the distribution of membership in the Academy at large. Clearly, we can use more reviewers from some of the smaller divisions. If your work belongs to one or more of these less represented or smaller divisions/interest groups, we hope you will volunteer to be an ad hoc reviewer. We are eager for your involvement and contribution.

In this final issue of the year, we also print the "Code of Ethics" for the Academy at large. This is to remind us that in our intellectual pursuits and interactions with colleagues, students, and clients in consulting activities, we must uphold the highest level of professional standards. All members of the Academy expect one another to observe the code of ethics that was developed by Academy members for Academy members.

Lastly, this issue also marks the completion of the first full year of editorship for myself, Rita Kosnik, and Greg Northcraft. We have tried to uphold the excellent traditions and rigorous standards established for the *Journal* by our predecessors. We have been able to offer our authors relatively speedy decisions on their manuscripts. The average time from receipt of a manuscript to sending out the decision letter was 65 days, not including manuscripts that were returned without review (which have an average response time of 12 days). We strive to provide constructive and developmental feedback to our authors. We have had positive responses about the quality of our reviews from a number of authors (even from some of those whose papers were rejected), but we have also heard from some that they were disappointed by the review quality. We are sure that there is a range of opinions among our authors regarding their experience with *AMJ.* We will continue to work with our reviewers on further improving the quality of the reviews. We certainly welcome any feedback that you as authors or as reviewers care to share with us.

I would like to close this statement with a sincere wish that you have a wonderful holiday season. May you enjoy the spirit of this season and may 1998 bring good fortune and good health to you and your loved ones.

Anne S. Tsui
Hong Kong

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The editors and staff of *AMJ* would like to take this opportunity to thank the many scholars who have contributed their time and expertise and reviewed manuscripts for the *Journal* during this past year.

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Gary Yukl
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Mary Zalesny
Todd Zenger

Areas of Expertise of the Editorial Board Members and Ad Hoc Reviewers of the *Academy of Management Journal*[a]

Area of Expertise	Percentage of Editorial Board Members	Percentage of Ad Hoc Reviewers
1. Management History	5.9	2.4
2. Management Education and Development	4.4	5.8
3. Organizational Behavior	55.9	49.4
4. Business Policy and Strategy	45.6	29.7
5. Managerial Consultation	1.5	1.1
6. Operations Management	4.4	3.6
7. Organization and Management Theory	36.8	34.0
8. Personnel and Human Resources	52.9	33.1
9. Social Issues in Management	19.1	12.0
10. International Management	45.6	21.8
11. Organization Development and Change	17.6	15.0
12. Organizational Communication and Information Systems	17.6	12.2
13. Health Care Administration	5.9	4.1
14. Public and Nonprofit Sector	5.9	3.2
15. Careers	27.9	14.3
16. Women in Management	19.1	11.1
17. Entrepreneurship	16.2	7.5
18. Technology and Innovation Management	25.0	15.4
19. Research Methods	32.4	17.1
20. Conflict Management	22.1	12.8
21. Managerial and Organizational Cognition	16.2	11.5
22. Organizations and the National Environment	5.9	3.4
23. Other	2.9	7.3
Number of Reviewers	68	468

[a] Numbers refer to the proportion of reviewers declaring expertise in a particular area. These proportions sum to more than 100 percent because each reviewer can declare expertise in more than one area.

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TEACHING EFFECTIVENESS IN THE ORGANIZATIONAL SCIENCES: RECOGNIZING AND ENHANCING THE SCHOLARSHIP OF TEACHING

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The 1997 Special Research Forum on Teaching Effectiveness in the Organizational Sciences represents an effort both to recognize the role of the scholarship of teaching and to enhance teaching effectiveness via empirical research. We sought to advance research about good teaching and effective learning in the organizational sciences. We first discuss the changing climate for effective teaching and learning in business schools. Then we provide a brief overview of the current state of knowledge and our view of future needs for research about teaching effectiveness in the organizational sciences. Next, we describe the history and purpose of this forum. Finally, we give an overview of the articles it includes.

Business professors are trained experts in many areas—accounting, finance, strategic management, organizational behavior, marketing, and human resource management. For the most part, the development and training of a future professor follows a well-established and arduous path through a doctoral program of study. Not unlike a fledging warrior, a new recruit enters the program, enthusiastic but relatively clueless, and through a series of challenges and learning experiences eventually enters the "men's hut." Those who are welcomed to the hut have learned a theoretical body of knowledge, are able to articulate research questions that may extend the body of knowledge, and can execute and interpret the results from a well-designed research study. Typical established members of the academy spend roughly one-third to one-half of their time continuing this pattern of activity during their careers.

Contrast this careful grooming process with the way many business professors are prepared for how they spend the remaining two-thirds to

We are most grateful to both Angelo DeNisi and Joanne Martin, who had the vision for this highly unusual research forum, and we thank all the reviewers who did such a fine job for us and for the field. We also thank Cynthia Rée for her excellent administrative support and Estelle Scaiano, former managing editor of *AMJ*, for her wise and invaluable guidance.

one-half of their careers, in teaching. Many business professors are introduced to the job of teaching while pursuing their doctorates. Either because their doctoral programs consider teaching experience an essential attribute of the "trained" professional, or because their universities need doctoral students to staff undergraduate courses, or both, graduate students are often granted teaching assistantships and assigned to teach one or two courses per term. The preparation provided to these novice teachers resembles teaching a child to swim by throwing it out of the boat and into the water. Armed with perhaps only experiences gleaned from teachers they have had, newcomers to the game are left to swim or to sink, often by themselves. These early experiences likely have long-lasting effects, good and bad, on the future attitudes and expectations professors hold for the classroom.

THE CHANGING CLIMATE FOR EFFECTIVE TEACHING AND LEARNING IN BUSINESS SCHOOLS

Having noted these rather haphazard and almost indifferent approaches to the craft of teaching in professional schools, it is fair to say, nevertheless, that recent initiatives have sought to address imbalances in the preparation of new faculty as researcher-teachers and to improve the teaching capabilities of more experienced faculty members. Professional institutions, such as the Academy of Management, have provided, in the past several years, financial, organizational, and moral support for the development and recognition of teaching excellence. Deans of professional schools and other university administrators now make teaching performance a priority in their reports and statements about progress in their institutions. This is in large part a result of the pressures for good teaching coming from students, legislatures, and other stakeholders of universities, but it is also a result of the belief in the inherent value of good teaching that some academics and administrators hold. Many universities have formal prizes to acknowledge teaching excellence. At our own institutions, the University of British Columbia (UBC) and the University of Denver, for example, research and teaching prizes are awarded each year. The teaching prizes at UBC include one for pedagogical innovations and two others for extended contributions to this craft. Summer stipends are awarded at UBC to both deserving teachers and researchers to support their work as scholars. Some institutions could, however, improve their symbolic, if not their actual, support for teaching. One institution with which we are familiar grants an annual award for teaching excellence. The award includes one year of release time from teaching!

Doctoral programs in some business schools have added attention to teaching through formal teaching seminars and workshops for doctoral students. (Examples include Georgia State University, the University of Illinois at Urbana-Champaign, and the University of British Columbia.) Besides such formal programs, there are countless instances of informal support provided for novice and experienced teachers by faculty mentors and peers. Simple exchanges of ideas for textbooks, syllabus entries, exam formats and ques-

tions, responses to cheating incidents, and ideas for active learning can be commonplace. Boyer (1990) described a program at Northwestern State University in Louisiana called "teaching circles"; these were groups of five to seven faculty members who voluntarily came together to observe and review each other's teaching. At the University of Denver, a biweekly informal brown-bag series on discussion in the classroom was held for one year. Such innovations take place in an increasing number of schools, but they are difficult to operate for any length of time without formal administrative support. In the broader context, organizations such as the Organizational Behavior Teaching Society (OBTS) and the Management Education Division of the Academy and journals such as the *Journal of Management Education* have provided outlets for dialogues on teaching and havens for those who have wanted to explore and renew their teaching competence.

All of these developments auger well for an improved climate for good teaching in professional schools. They are a necessary but, in our opinion, insufficient basis for establishing the status, support, and competency of teaching in such institutions. In his important work, *Scholarship Reconsidered,* Boyer (1990) elevated teaching from an important activity for professors to an element of scholarship. He thus asserted that the pursuit of excellence in teaching is legitimate not only because professors have an interest in that pursuit, but also because scholarship is at the heart of the academy. In his presidential address to the Academy of Management's annual meeting, Mowday (1997) endorsed this broadened view of scholarship for our profession. However, for teaching to be taken seriously in academia and for improvements in its development and delivery to occur, there needs to be a body of work, both conceptual and empirical, on which it can be based and communicated.

THE CURRENT STATE OF KNOWLEDGE ON TEACHING EFFECTIVENESS IN THE ORGANIZATIONAL SCIENCES

The dilemma in business schools is that there is not much systematic research work available on teaching in such contexts. A database search of the contents of the three journals published by the Academy of Management revealed that literally a handful of articles on teaching and teaching-related issues have been published in these distinguished outlets.[1] We identified approximately 5 articles on the scholarship of teaching published in the *Academy of Management Journal* (*AMJ*) since 1974. Teaching issues were slightly more prominent in the *Academy of Management Review* (*AMR*), where approximately 12 articles were identified in our search. In fact, *AMR* actually contained a section for articles on pedagogy in its first four volumes. Finally, the *Academy of Management Executive* appears to have published approximately 4 articles on teaching-related issues.

[1] Given the vagaries of the database search process, it is difficult to be precise about these data. However, even if we are incorrect by a magnitude of 10, we believe our point still holds.

Professors of business need to expand and enrich the empirical as well as the conceptual bases upon which their teaching is established. Part of this effort involves knowing more about what has been published about teaching and learning by experts in the field of higher education. We suspect that this is a literature that, as scholars, professors of business could seek out much more frequently than they do.

But professors of business also need to have a sound basis of knowledge about what effective teaching and learning means in their own disciplines, as both the context in which they teach and the subjects about which they teach are unique. Perhaps more than in most fields, in management, *how* teachers teach and the tools they use closely mirror important aspects of *what* they teach about the nature and functioning of the phenomena. And, because of the nature of this field, management scholars have strong potential to contribute to the understanding of teaching in other disciplines as well.

Much writing and some research on the scholarship of teaching in business disciplines has already been accomplished. For example, there are journals on teaching issues in the fields of accounting and international business. In the specific domain of the organizational sciences, the OBTS has held annual meetings for 25 years and has published a journal, first called *Exchange,* then the *Organizational Behavior Teaching Review,* and currently, the *Journal of Management Education,* published with Sage Publications. A review of these publications, the program of the OBTS's most recent meeting, the general literature of the field, and the submissions to this forum revealed roughly four themes in the current body of knowledge: teaching practice, technology in the classroom, evaluation, and the classroom-as-organization. Each will be discussed in turn.

Teaching Practice

In the area of teaching practice, published work can be identified that explores such diverse issues as teaching to adult learners (Carrier, 1987), the use of team teaching (Slater, McCubbrey, & Scudder, 1995), global learning issues (Sullivan & Tu, 1995), pluralism and diversity in the classroom (Gallos, 1995), enhancing teaching in doctoral programs (Forray, 1996), teaching styles and student learning styles (Thompson, 1997), and "nuts-and-bolts" issues like class participation (Mello, 1997) and grading (Bilimoria, 1995). By far the largest amount of research in this area has been done on specific pedagogical devices. There is an extensive literature on the use of games and simulations (Curry & Moutinho, 1992), experiential exercises (Ball, 1995), videotapes and movies (Padget & Luechnauer, 1997), and even humor and cartoons (Sankowsky & Ornstein, 1989) in the classroom.

Technology

A rather dramatic trend in the literature on teaching is related to the increased number of publications on the use of technology in the classroom and its results. Articles can be identified on classroom implications of the

use of computer-mediated technology (Shinkins, 1995), multimedia (Langley & Porter, 1994), the World Wide Web and the Internet (McCulley, 1995), and distance learning (Hogan, 1993). It is noteworthy that two of the four articles published in this forum provide research on technology in the classroom.

Evaluation

The broad topic of teaching evaluation can be divided into two main categories: research on student evaluation of teaching and research on the evaluation of the impact of teaching. An abundant literature, predominantly in the field of higher education, investigates the area of student evaluation of teaching (Cashin, 1995). Research has examined how student evaluation of teaching quality is best measured and whether it is valid, reliable, and related to expected grades, among other topics. An emerging line of research is investigating whether teachers achieve our established goals in the classroom (Thompson, 1991). Outcome-based evaluation, as it is commonly called, has been increasingly invoked as a way of assessing student learning, and hence teaching effectiveness.

The Classroom-as-Organization

In the organizational disciplines, students often recognize the parallels between the content teachers are delivering on effective management and the process used to manage the classroom. As noted above, of these four research streams this is perhaps the one that is most closely aligned with the management discipline itself. Commonly referred to as "classroom-as-organization," this research applies concepts directly from the core of the discipline to classrooms. Recent examples of this area include research on total quality management in the classroom (Meisel & Seltzer, 1995), the use of systems theory for the design of curricula (Bardoel, 1997), and a very large and interesting literature on the use of teams and the nature of teamwork in the classroom (Lerner, 1995). Again, we note that two of the four articles published in this forum report results of research on this theme.

FUTURE NEEDS FOR RESEARCH ON TEACHING EFFECTIVENESS IN THE ORGANIZATIONAL SCIENCES

Although much literature exists on the scholarship of teaching, there are many areas of teaching and learning distinctive to the organizational sciences that would benefit from more, and more rigorous, research. We will report our view of what these needs are in the same four streams we noted above.

Teaching Practice

There is a growing trend toward interdisciplinary treatments of managerial and organizational issues. This is in part due to practices in organizations, including General Motors, General Electric, and others, designed to break down barriers between various functions, such as research and devel-

opment, marketing, and production, and to operate businesses through teams of managers and specialists coming from the functional areas of the organization. In some business schools this integration is reflected in both the material taught and the way it is taught. In particular, team teaching involving different disciplines of business is emerging as a more common practice than it was in earlier times. We know of such innovations anecdotally. In the Faculty of Commerce and Business Administration at UBC, for example, the master of business administration (M.B.A.) program starts with a four-month integrated core taught by a team of seven instructors. (The team had five instructors in 1997–98.) Core program classes frequently involve the entire teaching team (from accounting, finance, management information systems, marketing, operations, organizational behavior, and strategy) working together in the classroom with the student group. Similarly, integrated teams of instructors teach students in the Daniels College of Business at the University of Denver. The M.B.A. core is delivered in seven transdisciplinary, team-taught courses, where as few as two or as many as five faculty members representing different disciplines work together in the classroom. This approach is described and discussed in a series of four articles published in the *Journal of Management Education* (Fukami et al., 1996).

If this approach or some variation involving smaller teams is becoming more attractive to business schools—and we believe that it is—then it would be very helpful to instructors and administrators to know what distinguishes successful from unsuccessful team instruction. Given the high investment costs for teachers and schools in this kind of instructional practice, there is a clear need for careful investigation of team processes and outcomes.

Technology

As is evident from some of the research published in this special forum, technological innovations of the past decade have opened windows on alternative modes of communicating knowledge and of acquiring information and understanding. It is now possible to study for an M.B.A. through virtual universities and programs such as the one created at the Fuqua School of Business at Duke University. Such programs are expensive to create and are high-priced. We see a need for these programs and their impacts to be studied. Are there significant gains to learning that stem from computer-based instruction? What are the limits of such approaches? We sense that there may be optimal blends of virtual and real organizations for delivering professional education and for using technology and humans to facilitate learning. Research is needed to help identify and to evaluate such combinations and to assist in understanding the future roles of those who teach in and around virtual degree programs.

On a smaller scale, research on the use of technology as a tool to facilitate teaching and learning in the traditional classroom would also be welcomed. As teachers have progressed from the use of blackboards and chalk, to overhead transparencies and computer-aided presentations, and now to

multimedia, more research is needed to help guide the use of these tools to enhance learning.

Evaluation

How do professors of business evaluate learning under conditions of continual and even rapid change? What should/can they impart to students in professional schools who are likely to face challenges and to make decisions in contexts that may be very different both from those familiar to their instructors and from those described in the texts, cases, and so on used in the classrooms of today? These are pressing questions that deserve imaginative research designs, competently executed. We expect that some of this research will be focused on active learning situations, such as those found in internships, cooperative learning programs, and the like. One of the learning issues involved will be the extent to which the learning taking place reflects what has been anticipated in the design of the programs.

We also wish to flag a dimension of evaluation that has plagued teachers and administrators for years (some might say decades) and that urgently requires rigorous investigation. We refer here to the issue of grade inflation. Over time, there appears to have been increasing pressure to inflate grades.[2] Sources of such pressure include administrators ("The average GPA must be competitive . . . to attract recruiters; to attract students to courses" [Mahoney, personal communication]), teachers' desires to be popular or to avoid hassles, students' desires to get good jobs, and so on. Outcomes of this trend include an inability to differentiate among students on the basis of performance, given that, in fact, only "A" and "B" grades exist. If President Clinton's promise to give scholarships to students with "B" averages materializes, it will likely cement this condition of only two grades.

Research is needed to establish the actual effects of this trend. What is the nature and extent of grade inflation? What effects do grades have on learning? On subsequent performance? What effect does inability to differentiate students on the basis of performance have? For example, could the lack of measures recognizing differences in performance lead to their elimination in assessing the worth of students to recruiters and others? What, then, might be the bases of differentiation? Contacts? Personality? Research on such issues may be difficult to undertake, given their sensitivity; nevertheless, we believe them to be important.

The Classroom-as-Organization

We expect an increase in attention to teaching students the craft and skills of improvisation. We think that it will become more important to the craft of teaching as well. We note the attention to improvisation in organizations in an article in a special issue of *Organization Science,* "Jazz Improvisation and Organizing" (Meyer, Frost, & Weick, 1998). Research on

[2] We thank Thomas Mahoney for his cogent thoughts on this issue.

these skills and what effects they may have on learning will become important. We draw the readers' attention to an interesting and provocative article related to this topic by Weick (1997). He articulated important, researchable aspects of improvisation in the learning process. One such issue is whether teaching through polished routines leads to better learning than does the delivery of knowledge through improvised teaching.

THE HISTORY AND PURPOSE OF THE FORUM

This special research forum in the *Academy of Management Journal* was a partial response to this perceived need to develop further the body of empirical research about teaching in the organizational sciences. It was intended to contribute to the knowledge base and to signal to those who might see teaching as simply a set of tricks that comprise a technology that it is a serious academic pursuit, legitimately one of the components of scholarship that Boyer and others have described.

The origin of this special forum was an invitation from Angelo DeNisi, then editor of *AMJ,* to Peter Frost, then chair of the Standing Committee on Teaching for the Academy of Management, to submit a proposal to *AMJ* on this topic. Peter recruited Cindi Fukami, the current chair of the Teaching Committee, to join him in editing this project. Once the proposal was accepted, Peter and Cindi sent out the call for papers and invited a number of researchers to join the editorial board for the project. The positive response to the invitation to review was overwhelming. In all, 48 individuals reviewed one or two manuscripts each, as members of the review board (their names are listed on page 1398 of this issue). Many of them are highly visible and respected scholars in the field of organization and management.

We were very gratified by the response to the call for papers. As we have already argued, this arena, teaching effectiveness, is not a mainstream one in the organizational sciences. Despite this fact and the relatively short lead time provided for developing and reporting on empirical findings on teaching effectiveness in the organizational sciences, we received 21 empirical papers for review. Our call specified some potential topics (such as those outlined above) and some parameters for the papers we were interested in receiving. We welcomed naturalistic as well as laboratory studies and qualitative as well as quantitative methodologies. We also stipulated some approaches to research that we would find less persuasive, such as studies that reported simple correlations between teaching styles and performance and the like.

Many of the papers we received dealt with important issues that were researched in interesting ways. In selecting the set for inclusion in *AMJ,* we were guided by our desire to choose papers on relevant topics where the research conducted met a very high standard. We believed that it was important to contribute to the accumulation of a body of research on teaching effectiveness that matched in quality other work that appears in the pages of *AMJ.* In this way, we hoped to add understanding about teaching effectiveness in the organizational sciences and to showcase research that would encourage others to engage in inventive and rigorous research on the topic in

the future. The four papers included in this forum met these criteria, in our view. We also hoped that, for authors of papers not accepted for publication, the reviews they received will have proved helpful to them in publishing their work and will have spurred them to continue to work on these and related issues. We thank all the authors who submitted their work to us. Simply by doing so, they affirmed the value of the call. They moved forward the cause of understanding the nature of good teaching.

OVERVIEW OF THE FORUM

As noted, four papers were accepted for publication in this forum. Two address an emerging frontier for higher education, especially in professional schools: technology in the classroom. The first of these two articles, "Teaching Effectiveness in Technology-Mediated Distance Learning," by Jane Webster and Peter Hackley, recognizes that although distance learning is becoming more prevalent in our business schools, it has remained a largely unstudied phenomenon. Webster and Hackley drew upon research in the disciplines of communication, education, and information systems to develop a model of distance learning. The results of their study indicate that instructors in distance learning classrooms can enhance their effectiveness by exploiting the richness of their media, by building in opportunities for students to become comfortable with the technology employed and by themselves learning to control the technology, by projecting positive attitudes, and by using interactive teaching styles. These authors found that, even under high-technology circumstances in the classroom, the most important influence on the involvement and participation of the students was the teaching style of the professor. The second of these two articles, "Using Information Technology to Add Value to Management Education," by Maryam Alavi, Youngjin Yoo, and Douglas R. Vogel, describes a case study of the design and delivery of a graduate information systems course that linked students and faculty at two universities. The authors predict that these types of partnerships will increase as universities seek to provide more value to student education with less overall cost.

The other two articles in this forum integrate concepts gleaned from mainstream scholarship in the organizational sciences to achieve a better understanding of the classroom-as-organization. The first of these, "Designing Effective Learning Systems for Management Education: Student Roles, Requisite Variety, and Practicing What We Teach," by Cynthia A. Lengnick-Hall and Martha M. Sanders, describes the application of process design principles from organizational science to the construction of learning systems that produce consistent, high-quality management education. The results of this study suggest that if professors apply what they know about complex systems in general to the design of management education systems in particular, they can enhance effectiveness in the classroom. The second of these two articles, "The Social Fabric of a Team-Based M.B.A. Program: Network Effects on Student Satisfaction and Performance," by Timothy T. Baldwin, Michael D. Bedell, and Jonathan L. Johnson, applies social network theory to the attitudes and performance of students in a large M.B.A. pro-

gram. The results of this study have important implications for the enthusiastic use of teams in our M.B.A. programs. Baldwin, Bedell, and Johnson found that centrality in friendship, communication, and adversarial networks affected both student attitudes and grades. In addition, patterns of relationships within and between teams also had significant effects on student perceptions of team effectiveness and objective team performance. In short, teams in M.B.A. programs need to be designed and managed so that their considerable effect results in more productive learning. As a set, all four articles strongly suggest that professors can apply concepts and theories from organizational science to better understand and manage learning in the classroom.

We close this introduction with an expression of our pleasure at having been involved in such a worthy undertaking. We hope that the cause of scholarship has been enhanced and that appreciation of the value of competent research on teaching has been heightened. If, as a result of the publication of these papers in this special research forum, more scholars are encouraged to do research on the teaching and learning processes, and more administrators are persuaded to provide support for teaching and learning about teaching, this will have been a worthwhile undertaking for all who contributed to the project. If, in addition, this forum helps foster a more accepting and tolerant culture for the practice of teaching in business schools, then, as co-editors who care passionately about the topic, we will feel most gratified indeed.

REFERENCES

Ball, S. 1995. Enriching student learning through innovative real-life exercises. ***Education and Training,*** 37(4): 18–25.

Bardoel, A. 1997. ***Using systems thinking as a common language to teach OB to culturally diverse groups.*** Paper presented at the annual meeting of the Organizational Behavior Teaching Society, Cleveland.

Bilimoria, D. 1995. Modernism, postmodernism, and contemporary grading practices. ***Journal of Management Education,*** 19: 440–457.

Boyer, E. L. 1990. ***Scholarship reconsidered: Priorities of the professoriate.*** Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Carrier, C. 1987. Technology-assisted adult learning. ***Training and Development Journal,*** 41: 98–100.

Cashin, W. 1995. ***Student ratings of teaching: The research revisited.*** Paper no. 32, IDEA, Center for Faculty Evaluation and Development, Kansas State University, Manhattan.

Curry, B., & Moutinho, L. 1992. Using computer simulations in management education. ***Management Education and Development,*** 23: 155–167.

Forray, J. 1996. Doctoral education and the teaching mission: A dialogue with Jean Bartunek, Lee Burke, Craig Lundberg, Jane Giacobbe Miller, Pushkala Prasad, and Chris Roberts. ***Journal of Management Education,*** 20: 60–69.

Fukami, C. V., Clouse, M. L., Howard, C. T., McGowan, R. P., Mullins, J. W., Silver, W. S., Sorensen, J. E., Watkins, T. L., & Wittmer, D. P. 1996. The road less travelled: The joys and sorrows of team teaching. ***Journal of Management Education,*** 20: 409–410.

Gallos, J. 1995. When authority = she: A male student meets a female instructor. ***Journal of Management Development,*** 14(2): 65–76.

Hogan, C. 1993. Simultaneously teaching facilitation skills to students at separate locations using interactive videoconferencing. ***Training and Management Development Methods,*** 7: 5.17–5.32.

Langley, P., & Porter, C. 1994. The multimedia way to teach human resources. ***Personnel Management,*** 26: 38–41.

Lerner, L. 1995. Making student groups work. ***Journal of Management Education,*** 19: 123–125.

McCulley, P. 1995. Education on the Internet: A hands-on book of ideas, resources, projects and advice. ***Information Today,*** 12(7): 52.

Meisel, S., & Seltzer, J. 1995. Rethinking management education: A TQM perspective. ***Journal of Management Education*** 19: 75–95.

Mello, J. 1997. ***The role of class participation in management education across cultural and national settings.*** Paper presented at the annual meeting of the Organizational Behavior Teaching Society, Cleveland.

Meyer, A., Frost, P. J., & Weick, K. 1998. Jazz improvisation and organizing. ***Organizational Science,*** 9: In press.

Mowday, R. T. 1997. Presidential address: Reaffirming our scholarly values. ***Academy of Management Review,*** 22: 335–345.

Padget, M., & Luechnauer, D. 1997. ***Using movies to teach organizational behavior.*** Paper presented at the annual meeting of the Organizational Behavior Teaching Society, Cleveland.

Sankowsky, D., & Ornstein, S. 1989. A process model of humor: Bringing Spam to the classroom. ***Organizational Behavior Teaching Review,*** 14(2): 83–92.

Shinkins, S. 1995. Using computers to teach project management. ***Journal of Management Development,*** 14(7): 4–14.

Slater, J. S., McCubbrey, D., & Scudder, R. 1995. Inside an integrated MBA: An information systems view. ***MIS Quarterly,*** 19: 391–410.

Sullivan, S., & Tu, H. 1995. Developing globally competent students: A review and recommendations. ***Journal of Management Education,*** 19: 473–493.

Thompson, B. 1991. Outcome-based learning: New name, old concept. ***Training,*** 28(8): 52–53.

Thompson, T. 1997. Learning styles and teaching styles: Who should adapt to whom? ***Business Communication Quarterly,*** 60(2): 125–127.

Weick, K. 1997. The teaching experience as learning in public. In R. André & P. Frost (Eds.), ***Researchers hooked on teaching:*** 283–300. Thousand Oaks, CA: Sage.

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TEACHING EFFECTIVENESS IN TECHNOLOGY-MEDIATED DISTANCE LEARNING

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Technology-mediated distance learning is becoming increasingly important to business curricula. However, little theoretical development or empirical research has examined teaching effectiveness in distance learning. Thus, this article draws from research in management communications, education, and information systems to develop an initial conceptualization of influences on technology-mediated distance learning outcomes. It then reports on an exploratory study utilizing both qualitative and quantitative techniques to examine 247 students' reactions to such distance learning.

Rapid developments in information technology (IT) have generated potential changes to teaching and learning. In particular, technology-mediated distance learning—a new method of distance education—is currently in use. It can be described as learning involving implementation of information, computing, and communications technology applications (Alavi, Wheeler, & Valacich, 1995) in more than one location.

Schools of business are adopting technology-mediated distance learning for undergraduate business cases and simulations and for employment interviews (Hildebrand [1995] noted these practices at Texas Christian University), for master of business administration (M.B.A.) courses (e.g., University of Maryland; Alavi et al., 1995), and for executive M.B.A. programs (e.g., Queen's University; *State of the Art MBA in Canada,* 1995), and these applications are occurring around the world (cf. *PictureTel Distance Learning,* 1996). However, if students rate the effectiveness of teachers as lower in these courses than in conventional courses, then instructors and administrators will want to know why this is so and what they can do to help overcome limitations of the technology.

Technology-mediated distance learning is becoming an important op-

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tion within education because it facilitates the sharing of costs, information, and expertise among multiple sites while providing additional educational opportunities for distant or disadvantaged locations. Another advantage of using information technology in education is that students are introduced to and take advantage of the very technologies that businesses are using to gain competitive advantage (Leidner & Jarvenpaa, 1993). Business schools are under increased pressure to graduate students with experience with these emerging technologies (Alavi et al., 1995; Hildebrand, 1995). Further, administrators see the cost benefits of adopting these technologies and the strategic advantages of penetrating new market segments (Walsh & Reese, 1995) and are encouraging their use by faculty members. Thus, it is important to develop a fuller understanding of the impacts of these technologies within education today.

A typical distance learning implementation may utilize information technology to provide audio, video, and graphic links between two or more sites, therefore using multimedia for communication. Collis described multimedia education as involving "more than one medium for the organization, information exchange, and interactive aspects of the learning experience" (1995: 136). However, little research has addressed reactions to multimedia when they are employed for communication (Chidambaram & Jones, 1993) and in distance learning in particular (Alavi et al., 1995; Ellis, 1992; Latchem, Mitchell, & Atkinson, 1994). Thus, researchers have called for the development of models and methodologies for the study of technology-mediated distance learning (Cleveland & Bailey, 1994; Storck & Sproull, 1995). This article makes a start toward achieving this goal.

In this article, we draw from research in the management communications (e.g., Fulk, 1993), education (e.g., Collis, 1995), and information systems (e.g., Leidner & Jarvenpaa, 1995) literatures to develop an initial conceptualization of key technology-mediated distance learning outcomes relating to teaching effectiveness and of factors that may influence these outcomes. We then report on an exploratory study utilizing both qualitative and quantitative techniques to examine teaching effectiveness through students' reactions to technology-mediated distance learning.

DEVELOPMENT OF HYPOTHESES

Technology-Mediated Distance Learning Outcomes

Student performance represents a key aspect of teaching effectiveness. However, reviews of research comparing the effectiveness of educational television and face-to-face instruction have found no or small differences in student achievement (Wetzel, Radtke, & Stern, 1994), and a recent distance learning study (Storck & Sproull, 1995) found no differences between the performance of students given interactive video instruction and face-to-face instruction. Cleveland and Bailey argued that distance learning studies "need to move beyond the limited perspective of class grade point averages as indicators of program quality and student learning" (1994: 140). Following this suggestion and Leidner and Jarvenpaa's (1995) taxonomy of learning

outcomes, we examined such outcomes relating to teaching effectiveness as student involvement and participation, cognitive engagement, technology self-efficacy, attitudes toward the technology employed, the usefulness of the technology, attitudes toward technology-mediated distance learning, and the relative advantage or disadvantage of such distance learning.

The education literature suggests that the first two outcomes are particularly important to teaching effectiveness. As Leidner and Jarvenpaa (1993) and Alavi and colleagues (1995) outlined in their reviews of the learning literature, learning is best accomplished through the active involvement of students. Similarly, educators proficient with technology-mediated distance learning have argued that instructors must generate student involvement for courses to be successful (Catchpole, 1993; 1995) videoconference because a common problem with this pedagogy is difficulty eliciting student involvement beyond passive note taking (*Introduction to Video Mediated Communication,* 1995).

Designing courses to be engaging encourages and facilitates learning (Adelson, 1992; Hsi & Agogino, 1993) and is vitally important in distance education (*Introduction to Video Mediated Communication,* 1995). For instance, Cleveland and Bailey (1994) found that although 91 percent of the students participating in a course taught via distance education expected the class to be intrinsically interesting and enjoyable, at the end of the course only 9 percent of the students suggested that the technology made the class more interesting. Although some preliminary research has examined characteristics of multimedia technologies encouraging student engagement, this research has examined situations in which students interact individually with the technologies (e.g., Bruce, Peyton, & Batson, 1993; Jacques, Preece, & Carey, 1995). In contrast, little research has examined the effects of multimedia technologies on student engagement during instructor presentations.

Several other outcomes relate to teaching effectiveness. First, the social cognitive theory (Bandura, 1986) concept of self-efficacy is relevant. Compeau and Higgins suggested that "the belief that one has the capability" to interact with a given technology (1995: 189) plays a significant role in users' expectations and performance. Consistent with social cognitive theory, students' technology self-efficacy may be an important outcome variable within technology-mediated distance learning. Second, students' opinions regarding technology and distance learning may have significant effects on the success of the method. Researchers have generally argued that the successful implementation of any new technology depends on factors related to users' attitudes and opinions (e.g., Davis, Bagozzi, & Warshaw, 1989; Zoltan & Chapanis, 1982). Therefore, we suggest that attitudes toward a technology, the perceived usefulness of the technology, and attitudes toward distance learning should be included as important learning outcomes. Finally, it is also important to include students' perceptions of the relative advantage (Moore & Benbasat, 1991) or disadvantage of distance learning, or a comparison of distance learning with traditional face-to-face instruction. That is, although students may have positive attitudes toward technology-mediated

distance learning, they may also believe that this form of learning is not as beneficial as a conventional classroom setting.

Influences on Outcomes of Technology-Mediated Distance Learning

Following Dillon and Gunawardena's (1995) framework for evaluating technology-mediated distance learning and Leidner and Jarvenpaa's (1993) model of learning in electronic classrooms, we examined four categories of influences on distance learning outcomes: technology, instructor, course, and student characteristics.

Technology characteristics. We propose that reliability, quality, and medium richness are key influences on learning outcomes. Technology reliability and quality are important attributes of task-technology fit (Goodhue & Thompson, 1995), and they will be especially important for a newer technology such as multimedia. In particular, participants in desktop videoconferencing presentations (Isaacs, Morris, Rodriguez, & Tang, 1995) and distance learning courses (Wetzel et al., 1994) often complain about poor video quality and audio-video synchronization. Reliability of the technology used is especially important when instruction is centered around the technology (Sandholtz, Ringstaff, & Dwyer, 1992): without the technology, there is no instruction to the remote sites. Thus,

> *Hypothesis 1. The reliability of the technology used in distance learning should relate positively to learning outcomes.*
>
> *Hypothesis 2. The quality of the technology used in distance learning should relate positively to learning outcomes.*

The perceived richness of multimedia technology should also influence learning outcomes. In medium richness theory (Daft & Lengel, 1986), a rich medium is one that conveys multiple verbal and nonverbal cues, allows for immediate feedback, uses natural language, and allows personal focus. Daft and Lengel created a hierarchy of medium richness, with face-to-face communication at the top, followed by telephone, electronic mail, and print communications. There has been some debate in the literature about whether richness is an inherent, objective property of media (as originally proposed) or whether it should be considered a perceptual phenomenon. According to the latter perspective, which has been suggested by social influence theorists (and is discussed below), different people in different social contexts perceive media differently.

Technology-mediated distance learning often incorporates interactive (either compressed or full-motion) video;[1] however, we expected it to be per-

[1]The quality of full-motion video is similar to that of television: there are no perceptible audio or video lags. With compressed video, there is a lag; for the equipment used in the classrooms providing data for this study, the lag was about one second.

ceived as less rich than face-to-face instruction for the following reasons: First, although the use of multimedia has not been the subject of enough research to place it on the richness hierarchy, researchers have considered it as falling below face-to-face instruction (Kydd & Ferry, 1994; Nahl, 1993). For example, comparing face-to-face, distributed synchronous, and distributed asynchronous groups, Burke and Chidambaram concluded that "bandwidth does make a difference: richer interaction environments elicit perceptions of greater social presence and communication effectiveness than more restrictive environments" (1996: 99–100). Second, students interact more passively with interactive video than they do with face-to-face instruction; this may be the result of a cultural association between interactive video and broadcast television (Storck & Sproull, 1995). For instance, research has demonstrated that both local and remote audiences pay less than full attention to interactive video presentations (Isaacs et al., 1995), that presenters speak more formally, and that listeners are less likely to provide aural feedback to speakers (O'Conaill, Whittaker, & Wilbur, 1993). Therefore, we propose:

> *Hypothesis 3a. Students will perceive the technology used in distance learning to be a less rich medium than traditional, face-to-face instruction.*

We also propose that students at remote locations will perceive the technology to be leaner than those at origination (that is local, or face-to-face) locations, because those at the origination points have the benefit of both the face-to-face instruction and the technology. More information is available to local students about the material and the teachers, and more interaction occurs (Storck & Sproull, 1995). Thus,

> *Hypothesis 3b. Students at origination sites will perceive the technology used in distance learning to be richer than those at remote sites will perceive it to be.*

Full-motion video is more similar to face-to-face instruction than is compressed video. Compressed video's transmission delays make students reluctant to contribute brief remarks and may result in blurred or jerky images and less accurate impressions of others (Storck & Sproull, 1995). Therefore,

> *Hypothesis 3c. Students in courses using full-motion video will perceive the technology used in distance learning to be richer than students in courses using compressed video will perceive it to be.*

Perceived medium richness is proposed to be associated with people's attitudes toward and use of media (Fulk, 1993; Fulk, Schmitz, & Ryu, 1995): the richer a medium is perceived to be, the more likely it will be preferred and used for any communication task (Schmitz & Fulk, 1991). Similarly, teacher immediacy, or accessibility "through verbal, paralinguistic, visual, and/or physical means" (Ellis, 1992: 7) will be higher with richer media and will result in more motivated and attentive students. Thus, we propose:

Hypothesis 3d. Students will report higher learning outcomes to the extent to which they perceive the technology used in distance learning to be rich.

Instructor characteristics. Collis concluded her review of the education literature concerning the impact of media with this observation: "It is not the technology but the instructional implementation of the technology that determines its effects on learning" (1995; 146). We propose that instructors' attitudes toward a technology, teaching styles, and control over the technology will affect learning outcomes.

Dillon and Gunawardena (1995) proposed that instructors' attitudes toward technology-mediated distance learning systems be included in evaluations of these systems. This view is consistent with Fulk, Schmitz, and Steinfield's (1990) social influence model of technology use, according to which social influences such as work group norms and co-worker and supervisor attitudes and behaviors can positively or negatively influence attitudes, media use, and choices. Perceptions of media are proposed to vary and to be, at least in part, socially constructed in organizations. The social psychological processes that are used to explain this likely phenomenon include social learning (Bandura, 1986) and social information processing (Salancik & Pfeffer, 1978). Organization members are expected to develop coordinated patterns of behavior based on observations of each others' behaviors, the consequences of behaviors, and emotional reactions (Fulk, 1993). A number of studies have empirically supported the social influence model, finding that attitudes toward and use of e-mail were affected by social influences from co-workers and supervisors (Fulk, 1993; Schmitz & Fulk, 1991). We propose that the same influences will occur in technology-mediated distance learning. Thus,

Hypothesis 4. To the extent that instructors have positive attitudes toward the technology used in distance learning, students will be likely to experience more positive learning outcomes.

The teaching style of an instructor—specifically, encouraging student interactions—should also affect learning outcomes for the following reasons. Interaction is key to all learning (Dillon & Gunawardena, 1995) and to learning with multimedia (Collis, 1995) and distance (Borbely, 1994; Latchem et al., 1994) technologies in particular. It is even more important to technology-mediated distance learning because of the "remote" feel of the interaction (*Introduction to Video Mediated Communication,* 1995). Without significant interaction, students may become easily distracted, making side comments to one another (Gowan & Downs, 1994) and giving part of their attention to other activities (Isaacs et al., 1995), because distance learning requires more concentration than a face-to-face meeting (Kydd & Ferry, 1994). Therefore, interactive teaching styles become crucial to success (Nahl, 1993; Schwartz, 1995). Thus, we propose:

Hypothesis 5. Students will experience more positive learning outcomes from technology-mediated distance learning with instructors who exhibit more interactive teaching styles.

The instructor's control of the technology also should relate to learning outcomes (Dillon & Gunawardena, 1995; Leidner & Jarvenpaa, 1993; Lewis, Whitaker, & Julian, 1994). Distractions can result from the use of the equipment (Gowan & Downs, 1994), and students become impatient when instructors encounter technical problems (Leidner & Jarvenpaa, 1993). Further, Storck and Sproull (1995) found that people who interact only via video rely less on task competency and more on communication competency when evaluating others. Therefore, if it appears that instructors have little control over the communication technology used in distance learning, students may view them as being less competent overall. Thus,

Hypothesis 6. Students will experience more positive learning outcomes from technology-mediated distance learning with instructors who exhibit more control over the technology.

Course characteristics. The number of student locations can affect learning outcomes. One reason for this is that a physical gap between student locations can result in students' feeling cut off from one another; students need to be able to see and interact with as many other students as possible to build a class community (Nahl, 1993). For instance, the larger the number of locations participating in a videoconference, the lower the participants' impression of personal contact and ratings of the perceived benefits and advantage of the technology (Gowan & Downs, 1994).

More student locations will also result in more administrative tasks for instructors, such as checking each location for questions. More tasks translates into less time for the discussion of course content. Further, it is difficult to build discussion into distance learning courses that have three or more sites, because of the time it takes to switch between locations, interruptions, and the lack of more-than-two-way video (Catchpole, 1995 video conference), so teacher effectiveness declines (Wetzel et al., 1994). Therefore, we propose:

Hypothesis 7. Students will experience more positive learning outcomes in technology-mediated distance learning courses with fewer student locations.

Student characteristics. Students may feel more self-conscious in distance telelearning situations, and going on-camera may inhibit them (Nahl, 1993). For instance, instructors have noted that some students are reluctant to sit within the range of a camera (Burroughs, 1995; Nahl, 1993). When students' images are displayed on a monitor, the salience of self increases (Storck & Sproull, 1995), and students may feel that they are "on television" and thus participate less than they would in traditional learning situations.

Speaking in front of a camera may be a high-anxiety activity, and some students will be uncomfortable and intimidated (Nahl, 1993). Thus, we propose:

> *Hypothesis 8. Students who are more comfortable when their images are displayed on a screen will experience more positive learning outcomes from technology-mediated distance learning.*

Finally, the social influence model of technology use (Fulk et al., 1990) suggests that classmates' (as well as instructors') attitudes will affect learning outcomes:

> *Hypothesis 9. To the extent that classmates have positive attitudes toward the technology used in distance learning, students will experience more positive learning outcomes.*

METHODS

Background

We studied 29 of the 30 technology-mediated distance learning courses taught during two semesters by instructors at six North American universities (one instructor declined to participate, citing overwork). The courses were in accounting, chemistry, computer science, engineering, mathematics, physics, political science, and sociology and involved teaching people located in seven cities. The universities had implemented distance learning mainly at the graduate level to offer courses for which enrollments would not be sufficient to justify offerings at one location or for which qualified instructors were not available at particular locations. The average course size was 16 students and ranged from 4 to 36.

Two types of distance learning rooms were used by the universities: one type transmitted full-motion video, and the other transmitted compressed video. In addition to videoconferencing equipment and equipment for transmitting documents and videos, these rooms were equipped with computers that instructors could use to display material to students. Students generally had individual microphones; additionally, the instructor could put a room into a conference mode for discussions by activating all room microphones. Students viewed two screens at the front of the room, one screen might display a document, and the other, students at another location. Seating was arranged in traditional theater style. There were no camera operators in the rooms; instructors had to stand (or sit) at one of several fixed locations in the rooms to appear on screen. Instructors were usually expected to handle the equipment themselves, and technical support was not readily available; if instructors encountered technical problems, they had a list of technical support people whom they could telephone in the hope that one would be available.

We collected both quantitative and qualitative information. The quantitative information came from a questionnaire we designed to study the factors affecting outcomes of technology-mediated distance learning. As Leidner and Jarvenpaa (1995) suggested, researchers investigating such outcomes should draw upon well-established variables from education research, rather than create new variables; thus, we took measures from past research whenever possible. The questionnaire was tested for face validity: we received feedback from our university's teaching and learning office and from a university steering committee evaluating the distance learning rooms.

To administer the questionnaire, we attended a class in each course near the end of the semester and went on-line to local and remote students to request their completion of the questionnaire outside of class time. Completion of the questionnaire was anonymous, voluntary, and unrelated to the course grade. All students who were in class that day received questionnaires and were asked to return them to us in preaddressed envelopes. Questionnaires were returned by 247 students, representing a response rate of approximately 69 percent.

Multiple types of qualitative information were collected to help "triangulate" our findings. For the first semester, we observed at least one (and usually more than one) class meeting in each course. We traveled to local and remote sites to observe students' reactions. During our observations, we recorded our personal reactions (e.g., to video quality or teaching style) and our observations of students' behaviors (such as reading newspapers or taking notes). In addition, we informally interviewed students and instructors before and after classes and during breaks. At the end of the semester, instructors provided further feedback on their reactions through electronic mail. Finally, the student questionnaire included an area for open-ended comments.

To help validate our qualitative findings for the first semester, in the second semester we hired a graduate student in psychology who was unfamiliar with our hypotheses. She was simply told to write down her observations of students' behaviors and her personal reactions to the technology and to talk informally with students and instructors. To remain consistent with what we did in the first semester, we asked her to observe at least one class meeting in each course. She traveled to local and remote sites to observe students' reactions. As in the first semester, instructors provided further feedback on their reactions through electronic mail, and the student questionnaire included an area for open-ended comments.

We were also participant-observers in three short courses held in both types of distance learning room, and we observed a technology-mediated course taught to multiple locations as part of another university's executive management education program.

The final type of qualitative information was an independent report on a focus group consisting of instructors of the distance learning courses held at the end of the first semester by our university's teaching and learning office.

Measures

On the questionnaire, we defined multimedia technology as "the two-way audio/video/graphic link used in this course." Unless otherwise indicated, all items were measured on seven-point scales, with response options ranging from "strongly disagree" to "strongly agree." Table 1 (in "Results") gives internal consistency reliabilities (Cronbach alphas) for all scales.

Dependent variables. We did not have access to student grades, and thus, student performance was not included as a dependent variable in this study.

For *involvement and participation,* we created seven items, five of which were adapted from Fellers and Moon's (1994) survey instrument. For example, one item stated: "As a student, I felt personally involved in the course."

Alavi and colleagues (1995) argued that measures of *cognitive engagement* in the learning process need to be developed. However, Csikzentmihalyi's (1975) motivational theory of flow, which describes individuals' subjective experiences "characterized by perceptions of pleasure and involvement" (Webster, Trevino, & Ryan, 1993: 412), seemed to be appropriate to capture students' cognitive engagement. Thus, for cognitive engagement, we used six items from Webster et al.'s (1993) flow measure, assessing the dimensions of attention focus, curiosity, and intrinsic interest and excluding items concerning individual control, since the instructor, not the students, controlled the technology. For example, one item stated: "This type of multimedia technology arouses my imagination."

For *technology self-efficacy,* we adapted five items from Hollenbeck and Brief (1987), such as "I believe that I will be able to use this technology easily in the future." This scale has demonstrated good reliability and validity in past research (e.g., Martocchio & Webster, 1992).

For *attitudes toward the technology,* we adapted items from Zoltan and Chapanis's (1982) bipolar general attitudes scale and Chidambaram and Jones's (1993) media perceptions questionnaire, creating a nine-item Likert scale. Students were asked, "To what extent do the following words or phrases appropriately describe the use of multimedia technology for classroom communication and education purposes?" Sample items include "effective," "good," and "dehumanizing."

For the *usefulness of the technology,* we created three items, such as: "This type of multimedia technology interferes with communication in the classroom" (reverse-coded).

For *attitudes toward distance telelearning,* we created six items, three of which were taken from Fellers and Moon's (1994) instrument. For example, one item stated: "I would recommend this type of distance learning course to someone else."

For the *relative advantage of distance learning,* we created five items, one of which was taken from Skinkle and McLeod's (1995) instrument. For

example, one item stated: "I do not believe that this type of Distance Education can ever be as good as face-to-face instruction" (reverse-coded).

Independent variables: *Technology characteristics.* For *reliability,* we created three items, two of which were adapted from Goodhue and Thompson (1995). For example, one item stated: "The technology was subject to frequent problems and crashes" (reverse-coded).

For *technology quality,* we created six items, two each for audio, video, and graphic qualities. Three items were adapted from Fellers and Moon's (1994) instrument, and one was adapted from Skinkle and McLeod's (1995) instrument. For example, one item for audio quality stated: "I could hear remote participants (the instructor and/or students) clearly."

For *perceived medium richness,* we used Webster and Trevino's (1995) eight-item measure based upon medium richness theory (Daft & Lengel, 1986). The measure included two items for each of the four dimensions of richness. The measure stated: "To what extent would you characterize multimedia (such as the technologies used in this course) as having the ability to. . . ." The eight items were then listed. For instance, one item, relating to feedback, was "give and receive timely feedback." Students responded on seven-point scales ranging from "not at all" to "to a very great extent."

To determine *location,* we asked: "Are you at: 1. a *remote* site (i.e., the course instructor usually is at another site), 2. a site in which the course instructor is *sometimes there,* 3. the *origination* site (i.e., the course instructor usually is at your site)?" The second category was needed because some instructors alternated between sites so that they could provide face-to-face contact at all sites.

We coded the courses with respect to *video type* as compressed video (0) or full-motion video (1), based on our knowledge of the technologies in the teaching rooms.

Independent variables: *Instructor characteristics.* Drawing upon social influence theory (Fulk et al., 1990, 1995), we adapted Webster and Trevino's (1995) one-item measure of social influence, which taps students' perceptions of *instructor's attitudes* regarding the usefulness of a medium. (Rice and Aydin [1991] argued that researchers should not ask subjects to rate others' attitudes because these ratings will more likely reflect the subjects' own attitudes than the others' attitudes. But if social influence theory is correct, perceptions of others' attitudes may be more important than their actual attitudes [Fulk et al., 1995].) The item stated: "Compared to traditional classrooms, how useful do you think your *instructor* considers Distance Education using this type of technology?" Students responded on a seven-point scale ranging from "not at all useful" to "very useful."

Three items adapted from Fellers and Moon (1994) captured *teaching style.* For example, one item stated: "The instructor encouraged student interaction."

To measure the instructor's *control over the technology,* we created four items, one of which was adapted from Fellers and Moon (1994). For instance, one item stated: "The instructor handled the equipment effectively."

Independent variable: *Course characteristics.* The *number of student locations* ranged from one to three. (For two of the courses, there was only one student location—that is, the course instructor was at one location, and all students were at another.)

Independent variables: *Student characteristics.* Two items were created to capture the students' *comfort with their images* on the screen, one of which was adapted from Skinkle and McLeod's (1995) instrument. For instance, one stated: "I was comfortable with the presence of my own image on the screen."

As for instructor's attitudes, we adapted Webster and Trevino's (1995) one-item measure of social influence tapping students' perceptions of *classmates' attitudes* regarding the usefulness of the medium. The item stated: "Compared to traditional classrooms, how useful do you think your *classmates* consider Distance Education using this type of technology?" Students responded on a seven-point scale ranging from "not at all useful" to "very useful."

Analyses

Minimizing type I error (Dillon & Goldstein, 1984) requires an omnibus test when dependent variables may be correlated. Thus, for the quantitative data, we first tested hypotheses with an omnibus test, canonical correlation, incorporating all dependent and independent variables. (Hypotheses that did not relate to the dependent variables—3a, 3b, and 3c—were not so tested; see results for these hypotheses below.) If the results of an omnibus test are significant, it is then appropriate to conduct individual multiple regression analyses for each dependent variable, which we did.

For the qualitative data for the first semester, we recorded our observations and impressions as they occurred and placed them in a file. At the end of the semester, we independently read and reread our filed notes to gain an impression of the important influences on learning outcomes. At the end of the second semester, we asked our graduate student observer to read over all the qualitative data for both semesters and to come up with themes; no other direction was given on what these themes should look like. As reported below, her themes were remarkably similar to our conclusions.

RESULTS

Descriptive statistics, including means, standard deviations, internal consistency reliabilities, and Pearson correlations, are reported for all quantitative measures in Table 1. The omnibus canonical correlation was significant (Wilks's lambda = 0.14, $F = 7.79$, $p < .001$). Table 2 presents results of the individual multiple regression analyses.

Findings Related to the Hypotheses

For each of the hypotheses, we present both our quantitative and qualitative findings. Hypothesis 1, proposing that the reliability of the technology

employed would relate positively to learning outcomes, was supported for three outcomes on the questionnaire: attitudes toward the technology, usefulness of the technology (a marginally significant relationship), and attitudes toward distance learning. Our qualitative findings also support reliability as an influence on learning outcomes. On occasion, we observed that the technology could be unpredictable and difficult to get up and running. Further, it might crash or drop one of the sites. Students made remarks such as these: "The technology did not work part of the time; we lost 1–2 hours," "Due to the difficulties with the multimedia technology the learning process was less efficient," and "Sometimes the technical problems delayed the learning and we needed to reschedule a class." Similarly, one instructor told us, "We've had a technical problem every week," and the focus group concluded that "the system can shut down and end the class prematurely (or prevent a class from even starting)." Finally, one of our observer's themes was "technology breakdowns."

Hypothesis 2, proposing that technology quality would relate positively to learning outcomes, was supported by the questionnaire results for technology self-efficacy (marginal), attitudes toward the technology, attitudes toward distance learning, and the relative advantage of distance learning. Our qualitative findings provide evidence for these findings. Many of our discussions with students in these classes dwelt on audio, video, and graphics quality. In some classes, transmissions were slow, leading to delays and time lags in signals and resulting in a choppy audio signal. For instance, one student said that there were "lots of interruptions due to the half-second delay; mostly, the professor interrupts the students." Another said that "lag-time is a pain due to the interruptions it causes," and another that "the delay is a drag for communicating." Similarly, one instructor stated: "Audio and video lag times are major contributors to my aversion to, and annoyance with, the system," and another remarked: "I never know what the people at the other end are seeing, if it's clear to them or what." Students also remarked on graphics quality, for instance: "Overheads tend to lose color and resolution."

We observed that remote students past the second row appeared small on the screen displayed at the front of the room and noted that we couldn't tell who was talking at the other end. Students also commented on their inability to see which student was asking a question at the other end. They recognized that this would be a problem for the instructor; an exemplary statement was "Students' raised hands are difficult for the professor to see." Finally, our observer noted "quality of technology" as a theme.

Hypothesis 3a, proposing that students would perceive the distance learning technology to be less rich than traditional, face-to-face instruction, was tested indirectly with the quantitative data. More specifically, we compared students' average ratings for perceived medium richness (4.44; see Table 1) with the average ratings found in other research for face-to-face meetings (4.76, converted from 3.40 on a 5-point scale; Trevino, Webster, & Stein, 1996); perceived richness is higher for face-to-face meetings.

Our qualitative results support this difference. As one local student

TABLE 1
Descriptive Statistics, Reliabilities, and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Reliability	4.13	1.44	(.86)																	
2. Technology quality	4.28	1.01	.43	(.70)																
3. Location	2.06	1.10	.11	.15	(N.A.)															
4. Video type	0.69	0.46	.24	.22	.33	(N.A.)														
5. Perceived medium richness	4.44	0.94	.28	.44	.15	.13	(.84)													
6. Instructor's attitudes	5.44	1.08	.22	.24	.02	−.03	.28	(N.A.)												
7. Teaching style	5.30	1.10	.19	.21	.06	−.12	.21	.20	(.77)											
8. Control over the technology	4.69	0.96	.52	.39	.04	.12	.37	.21	.37	(.68)										
9. Number of student locations	1.95	0.44	−.10	−.07	.32	.18	−.08	−.02	−.24	−.14	(N.A.)									
10. Comfort with image	4.52	1.29	.12	.16	.04	.06	.18	.17	.20	.18	.00	(.81)								
11. Classmates' attitudes	4.81	1.25	.38	.35	.05	−.09	.46	.62	.29	.36	−.14	.16	(N.A.)							
12. Involvement and participation	4.23	1.20	.26	.31	.07	−.08	.47	.34	.52	.38	−.28	.37	.48	(.87)						
13. Cognitive engagement	3.93	1.01	.30	.29	.10	−.08	.49	.34	.42	.44	−.14	.26	.48	.69	(.82)					
14. Technology self-efficacy	4.98	1.00	.27	.37	.01	.02	.48	.38	.28	.30	−.21	.28	.44	.65	.52	(.81)				
15. Attitudes toward the technology	4.38	1.08	.53	.51	.13	.03	.58	.41	.38	.55	−.19	.24	.54	.65	.65	.63	(.88)			
16. Usefulness of the technology	3.86	1.19	.43	.45	.09	.06	.57	.35	.27	.52	−.10	.31	.46	.61	.63	.51	.67	(.77)		
17. Attitudes toward distance learning	4.75	1.29	.46	.50	.08	−.02	.56	.45	.45	.50	−.18	.29	.62	.74	.71	.65	.77	.68	(.92)	
18. Relative advantage of distance learning	4.05	1.25	.36	.43	.10	.00	.52	.38	.31	.44	−.24	.35	.47	.72	.59	.60	.67	.65	.76	(.79)

[a] All r's > .12 are significant at $p < .05$. "N.A." = not applicable. Reliabilities (Cronbach alphas) are in parentheses.

TABLE 2
Results of Regression Analyses[a]

Independent Variables	Hypothesis	Dependent Variables: Involvement and Participation	Cognitive Engagement	Technology Self-Efficacy	Attitudes toward the Technology	Usefulness of the Technology	Attitudes toward Distance Learning	Relative Advantage of Distance Learning
Reliability of the technology	1	−0.01	0.01	0.02	0.21***	0.12†	0.11*	0.05
Quality of the technology	2	0.00	−0.05	0.11†	0.12*	0.09	0.14**	0.13*
Perceived medium richness	3d	0.25***	0.28***	0.29***	0.29***	0.33***	0.23***	0.26***
Instructor's attitudes	4	0.06	0.06	0.17*	0.12*	0.09	0.11*	0.14*
Teaching style	5	0.32***	0.22***	0.06	0.12*	0.01	0.19***	0.04
Control over the technology	6	0.04	0.16*	0.00	0.16**	0.22***	0.10†	0.14*
Number of student locations	7	−0.15**	−0.01	−0.15**	−0.07	−0.01	−0.05	−0.16**
Comfort with image	8	0.21***	0.10†	0.15**	0.05	0.15**	0.10*	0.20***
Classmates' attitudes	9	0.16*	0.19**	0.09	0.10	0.07	0.24***	0.08
F		26.54	18.65	15.14	37.76	25.07	40.22	23.01
Adjusted R^2		0.50	0.41	0.36	0.59	0.48	0.60	0.46

[a] Values are standardized regression coefficients.

† $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

remarked, there is "less eye contact by the professor with the audience as he is busy concentrating on the monitor and the lecture notes and screening the off-site classroom." Instructors found it difficult to be as involved with the students during lectures as they would have been in a traditional course. For instance, the focus group concluded that "instructor contact with students is not as direct and requires instructors to watch and look at various media (i.e., look at the camera and monitors often)." Other instructors made these remarks: "It's hard to monitor all the technical stuff and lecture too." "There is the danger that the 'technology' is interfering with the lecture material, i.e., I had to keep reminding or asking myself whether I had 'sent' the information, were the students seeing me and the 'live' document, etc.," and "My biggest complaint about the system is the chilling effect it has on the 'live' audience; I felt cut off from them by my need to 'play' to the camera; I felt that my own local class was seriously compromised by this system and did not get what I can usually give them in this course." Finally, one of our observer's themes was "the environment is stiff, sterile, and impersonal."

We observed that students seemed more detached than they generally do in traditional face-to-face instruction at *both* local and remote sites. We wrote the following in our notes: "It's like he's behind a barrier; the equipment separates him from the class, like he's not actually there." Students also made comments such as these: "The technology distracted me" and "It was distracting shifting views between the professor, the other classes, the overheads, and the computer screen." We observed students exhibiting detached behaviors such as sitting back, leaning their faces on their hands, and looking down rather than up at the instructors or their on-screen images. Finally, our observer noted about one instructor that "the prof looks ONLY at the overhead—not at the students at all. He probably wouldn't notice if the students got up and left." Concerning another instructor, she noted this: "I got the feeling that the machines and the equipment are acting like a wall between the prof and the students. The prof is using his machine and focusing on his stuff; the students are focusing on their stuff and their machines. There's a real 'distance' between them."

Hypothesis 3b, proposing that students at origination sites would perceive the technology to be richer than those at remote sites, was tested by correlating location with perceived medium richness ($r = .15$, $p = .02$). The qualitative results support a relationship between richness and distance. Students felt it was a disadvantage to be at a remote site. As one student at a local site remarked, "It was awkward communicating with the other class; we [the group here] never bonded with the other class." Students stated that remote students were limited by having to watch and hear the instructor through the system. One noted this: "I felt like [I was] sitting in a church for a sermon. The distance between the instructor and students seems to be so large." Many students pointed out the difficulties in contacting an instructor outside of class hours if he or she were at another site: "I don't like the professor being at another location—it's hard to get help" and "There is an advantage to being local; students can interrupt easier or can ask questions after class."

In several courses, students from a remote site traveled to be part of the face-to-face class; they felt that the advantage of being at the same location as the instructor outweighed the disadvantage of the commute.

Instructors remarked that few communication cues came from the remote sites. As one noted, "The instructor loses direct eye contact with the students at the remote site. By observing the reactions of the students, I can detect whether they have grasped the material, and I will invite questions if I feel they didn't understand. I did not seem to have the same intimacy and interaction with students at the remote site." Similarly, another instructor stated:

> I generally have good rapport with my classes; I watch the students very carefully as I lecture and adjust my pace/material/style to the way they react. After ten years of lecturing, I can generally read my classes very well. The biggest shock to me was how much this classroom scenario interfered with this. The remote class felt somehow—I'm having problems picking the right word here—unreal. A lot of the normal cues I rely on, low-level sounds, fine facial expressions, were completely lost in the transition.

Instructors often (unknowingly) lowered the richness of their communication to remote sites by reducing communication cues in several ways. Some made little eye contact with the remote students; we often observed instructors "looking" at the remote site by gazing at the screen displaying the remote students rather than by looking at the camera. Thus, remote students viewed the top or side of the instructor's head when he or she was speaking directly to them, which reduced their "feeling of inclusion" in the course, as one instructor noted. In other courses we viewed, the arm of the document equipment partially hid the instructor's face from the remote students, again reducing communication cues. Finally, two of our observer's themes signal the importance of location: "location—remote or local" and "accessibility of prof: reduced communication."

We quantitatively tested Hypothesis 3c, proposing that students in courses using full-motion video would perceive the technology to be richer than students in courses using compressed video, by examining the correlation between video type and medium richness ($r = .13$, $p = .05$). Participants in the compressed-video courses were more likely to mention time lags in audio and video. For instance, students remarked on the "staggered communication," and instructors noted that "the quality of the transmission needs to be upgraded." In contrast, none of the focus-group professors using full-motion video mentioned this.

Hypothesis 3d, proposing that perceived medium richness would relate positively to learning outcomes, was supported for all outcomes on the questionnaire. Many of our qualitative findings relating to medium richness concerned feedback and nonverbal cues. For instance, one student remarked that there is "not much potential for feedback between professor and students." Many noted lost body language cues. For example, students stated,

"It's bad 'cause you can't see body language" and "You don't get facial reactions when presenting over video." Similarly, instructors commented, "It's hard to see body language."

Our qualitative findings are consistent with Fulk and colleagues' (1990) notion that medium richness can be partially subjective and partially objective. Supporting its subjectivity are these comments of students who were asked the difference between distance learning and face-to-face instruction: "I hate it; it's not as interactive," "I zone out (like watching TV)," "[It] feels like watching TV so my attention span seems to go down," "There was something lacking in the social interaction that exists in a traditional classroom," "not as spontaneous," and "slower feedback." In contrast, others said: "It works as well as a normal class," "The system is very similar [to face-to-face instruction]," and "There's no effect."

In support of the objectivity of medium richness, we observed that not all instructors used all media. For instance, in one course we observed an instructor moving from a conference-style discussion with both sites, to a demonstration of a multimedia software system, to an examination of information on the World Wide Web, to student presentations, all in the same class period. In another course, we observed an instructor spending the whole period "walking through" printed class notes (which had been distributed earlier to students) that he displayed through the document camera. Therefore, although multiple media were available to instructors, the number they used varied, leading to objective differences in medium richness.

Hypothesis 4, proposing that instructors' attitudes toward the technology would relate positively to learning outcomes, was supported by questionnaire results for technology self-efficacy, attitudes toward the technology, attitudes toward distance learning, and the relative advantage of distance learning. Our qualitative findings provide some justification for differences in instructor attitudes. For instance, we observed an instructor who demonstrated very little patience with the technology and who would easily give up when faced with technological problems. Instructors also mentioned their frustration with physical limitations resulting from the technology. They remarked that remaining in camera range restricted their movements, and those in the focus group noted that "instruction became less physically animated." Students noticed this: "It really limited the teacher to the immediate area of the console; he was unable to roam the room or use a chalkboard." Many instructors mentioned that they needed extra preparation time to teach using these technologies, covered less course material in class, and did not receive any additional compensation (such as teaching relief or assistants) for teaching in these rooms, all factors that could result in negative attitudes. Finally, when we asked one instructor what advice he would give to others planning to use the technology, he said: "Stay away from it—students benefit much less than in a traditional setting."

Hypothesis 5, proposing that more interactive teaching styles would relate positively to learning outcomes, was supported for involvement and participation, cognitive engagement, attitudes toward the technology, and

attitudes toward distance learning. Our qualitative findings corroborate that teaching styles and their effects on learning outcomes differed. For instance, we observed instructors who spent the whole class period lecturing to students from the front of the classroom (with only the instructors' personal microphones turned on) and who only asked for questions from students at the end of a section of material. In contrast, we observed other instructors who sat in the audience with the local students and conducted highly interactive discussions between the sites, with room microphones turned on.

Students in more interactive courses had more positive attitudes. For example, students remarked: "The presenter's style definitely has a lot to do with the acceptability of the class situation," "The system works without many problems because he's a good lecturer and because he makes it a participation course," and "The presentation style of the professor and the professor's ability to handle the equipment are the major factors." In contrast, in less interactive courses, students made comments like: "He would be just as good videotaped." Similarly, one instructor stated:

> I think it is important that the students at the remote site(s) see the instructor. I do not think there is anything worse than looking at a "live image" transmitted via the document camera with a finger pointing at some aspect of an equation or graph throughout the entire lecture. The students need to see something of the instructor and vice-versa.

Similarly, the focus group members suggested this: "Avoid lecture-only classes since the students are not likely to find them engaging." Finally, our observer noted "teaching style" as a major theme. Of a less interactive class, she wrote that "this class is just one overhead after the other—BORING!" and of a more interactive class, "this prof talks 'to' the students, not the screen—there is a very different feel with this, it's more natural, you feel like you are involved in the class."

Hypothesis 6, proposing that instructor control of the technology would relate positively to learning outcomes, was supported for cognitive engagement, attitudes toward the technology, usefulness of the technology, attitudes toward distance learning (a marginal relationship), and the relative advantage of distance learning. In some of the rooms, we observed that it was easy to get the sites up and running and connected. In others, it was more difficult to establish a connection, and one or more connections might drop during a class. These differences could lead students to believe that some instructors had less control over the technology than others. And, as described above, students highlighted the instructor's ability to handle the equipment as a key factor. Another student remarked: "I think it makes a difference with respect to how familiar the prof is with the equipment and how comfortable they feel with it. If the prof is anxious and uncomfortable, then it generalizes to everything else." Similarly, the focus group concluded: "Learn how the videoconferencing system works—be comfortable with it."

Hypothesis 7, proposing a negative relationship between the number of student locations and learning outcomes, was supported for involvement

and participation, technology self-efficacy, and relative advantage. Our qualitative findings also support this negative relationship. We concluded that the greater the number of locations, the greater the process losses owing to efforts to maintain contacts. For example, we observed one instructor thus trying to elicit feedback from each location: "Any questions from [location1]?" . . . no answer . . . "[location1]?" . . . no answer . . . "[location 1]? Are you there?" . . . the location finally answers. As our observer noted,

> I get the feeling that it's hard for the students to speak up because (with three locations) no one knows if someone else is trying to get through (due to the lag time) and there just seems to be this hesitancy and tentativeness among the students as they are all sort of looking at each other and no one knows if they should speak up or not.

We also observed process losses owing to sites' communicating at the same time: an instructor would ask for questions, there would be a delay while students would decide whether to respond, and then people at multiple sites would talk at the same time.

Hypothesis 8, proposing a positive relationship between students' comfort with their images on the screen and learning outcomes, was supported for involvement and participation, cognitive engagement (marginal), technology self-efficacy, usefulness of the technology, attitudes toward distance learning, and its relative advantage. Our qualitative findings are consistent with these results. For instance, many students remarked that they were nervous about asking questions: "I don't like the technology; I feel like I'm being broadcast if I speak, so I don't," "I was hesitant to speak over the microphone to ask questions," and "I was sometimes timid about asking questions for fear of embarrassing myself in front of people I don't know." Similarly, one instructor noted that students were "clearly intimidated to ask questions," and others remarked that students did not ask as many questions as in a traditional class. Some students "hid" at the back of the room. For instance, in one class we observed, several remote students sat at the very back of the room (far away from the other students, who were near the front), making it very difficult to see them. We mentioned this to the instructor, and he said that he had been trying to encourage these students to move up into better camera range for the whole semester, without success. Further, in one course students told us that the technology had scared off many students: one location dropped to 4 students from 14. Finally, "inhibited—fear of asking questions" was one of our observer's themes.

Hypothesis 9, proposing a positive relationship between classmates' attitudes and learning outcomes, was supported for involvement and participation, cognitive engagement, and attitudes toward distance learning. In our qualitative data, there were few student remarks on classmates' attitudes. However, we observed the powerful effects that peers' attitudes could have. For example, we were discussing the technology with a student who was expressing positive attitudes toward it. Another student who joined us proceeded to make several negative comments about the system. These com-

ments had a fairly strong effect on the first student, who eventually began to agree with the second one, contradicting his earlier statements.

Findings Unrelated to the Hypotheses

In addition to the findings relating to the hypotheses, two other key observations arising from the qualitative data merit attention—specifically, comparisons of outcomes for remote and local students, and students' appreciation for the distance learning technology.

First, although location demonstrated little relation to distance outcomes (see Table 1), the qualitative results paint a different picture. For instance, we noted very different "audience behaviors" at remote sites. Students at remote sites did not act as if they were as involved in the courses. Some talked among themselves about other issues, some read newspapers, and some wandered in and out of the classrooms at will; we even observed students spending the better part of a class playing with orange peels, examining their split ends, and writing on the bottoms of their shoes. Such behavior may be due in part to the fact that the instructor can monitor at most two sites at any one time (the local and one remote site); thus, for courses with three sites, at least one remote site was not being monitored at all times. Even with two sites, the students probably (correctly) felt that the instructors were not monitoring them most of the time but were focusing on the delivery of course material and on the technology itself (as described above). As students remarked, "My mind wandered too much; not having the prof here didn't make me pay attention," "It was a little easier to misbehave when the instructor was not in the room," and "I can't read a book if a prof is before me—I'm too embarrassed to." We observed that it was as if the small remote classes had turned into large lecture classes in terms of accepted student behaviors. Students also had this reaction: "It takes a small class and gives it the ambience of a huge lecture hall. The prof feels about that far away and I'm about that likely to ask questions." Finally, our observer noted that "students in the remote location are either sleeping or gazing elsewhere" and "I feel a difference in the tone of the class when I am in the same location as the prof. I feel more connected with the class."

Second, many students clearly recognized the advantages of distance learning technologies. They remarked on access to outside experts (professors), a wider selection of courses, interaction with students at other universities, and the opportunity to gain experience with the technologies. With respect to access to other professors, students noted "access to two excellent professors who aren't here," "gaining exposure to professors and other universities otherwise unavailable," and ability "to learn the material from experts in the field" as advantages. Students also appreciated the opportunity to choose from a wider selection of courses: "good for people who would not otherwise be able to take this course" and "I got to take a course that was not offered at my university." Concerning interactions with peers at other locations, remarks included: "met people from remote location, different backgrounds," "allowed alternate views of students not at XXX to be

included in our class," and "the ability to get input from students from XX and XXX at the same time and exchange ideas." With respect to the advantages of learning about these emerging technologies, students made remarks such as "exposed to new technology," "let me understand the use of the technology," and "it's great to be able to take advantage of this type of technology." Finally, our observer noted three themes related to students' perceptions of the advantages of these technologies: "course availability," "exchange ideas/interaction with students at other universities," and "exposure to new media."

DISCUSSION AND IMPLICATIONS

All influences on technology-mediated distance learning outcomes related to at least three of the seven outcome variables. Perceived medium richness related to all seven outcome variables. Thus, to the extent that instructors can exploit the full richness of the media available to them, students should experience more positive learning outcomes. Further, since medium richness is partially perceived, instructors can exhibit attitudes and behaviors that are consistent with a rich medium.

Other key influences on outcomes were students' comfort with their images on the screen (relating to six outcomes), instructor control over the technology (relating to five outcomes), and the quality of the technology, instructor's attitudes, and teaching style (all relating to four of the seven outcomes). Thus, in practice, instructors should build in opportunities for students to become comfortable with the technology employed for distance learning, learn to control the technology, project positive attitudes, and use interactive teaching styles.

Past research has demonstrated the importance of involvement and participation to traditional teaching, and our study supports this notion for technology-mediated distance learning. The most important influence on involvement and participation was teaching style. Similarly, when asked what advice they would give teachers using such technology for the first time, instructors also highlighted the importance of an interactive teaching style: "Think about ways of keeping the students involved," "Elicit participation by using the discussion mode frequently," "Use the conference mode early in the term to get students introduced at all sites," and "Try to motivate the students to ask questions/stimulate discussion." In sum, these results suggest that instructors need to make additional efforts to involve both local and remote students in the distance learning process.

Limitations

Field research like this study of distance learning courses taught during two semesters has many limitations. One limitation was the lack of control groups; we could not compare our results with those for the same instructors teaching in traditional classrooms or with those for distance education courses that did not have multimedia communication systems. Further, we

had no control over other aspects of the study, such as the subject matter of courses, the number of student locations, or the number of students. Latchem and colleagues (1994) showed that videoconferencing worked best when fewer than 30 people were on a site. However, we could not compare smaller and larger sites; our courses averaged 16 students. In addition, some of the variables that we would have liked to include in our analyses were partially confounded with others. For example, we would have liked to include course subject matter and instructors' and students' experiences with technology-mediated distance learning, but these variables were related: in our sample, courses in the sciences were more likely to have instructors and students with previous distance learning experiences. Additionally, our questionnaire results were subject to common method bias. As Alavi and colleagues (1995) pointed out, these issues present barriers to this type of research, and qualitative methods may be helpful when experimental and baseline manipulations are not possible. Our qualitative observations and interviews helped to overcome some of these limitations.

Implications for Practice and Research

Videoconferencing technologies have diffused dramatically in organizations since the late 1980s (Hart, Svenning, & Ruchinskas, 1995). Distance learning courses provide students with experience in these emerging technologies, and students in this study recognized the benefits of such exposure. They also appreciated the access to outside experts they gained and the opportunity to interact with peers at other sites.

Results of our study can provide initial recommendations to administrators on the characteristics of successful technology-mediated distance learning courses; these include use of rich media, few student locations, and instructors who project positive attitudes, employ interactive teaching styles, and help students become comfortable with having their images displayed on a screen. As medium richness was the most powerful predictor of learning outcomes, administrators should explore a variety of methods to increase students' perceptions. Our findings suggest that simple changes could be made to increase perceptions of medium richness, including: (1) providing camera and technology layouts to ensure that instructors maintain eye contact with both local and remote audiences, (2) encouraging instructors to use the variety of media available, to eliminate teaching by methods like the pointing finger on the document, and (3) training instructors not to focus on the technology at the expense of students. Further, courses in which the technology is reliable, of high quality (little delay in audio and video signals is particularly important), and in which the instructor demonstrates control over the technology will tend to be more successful. Training instructors about the technology and the importance of a participative style of teaching and providing an adequate technical support staff will help to alleviate some of these concerns. Very useful guides concerning training and support are available to administrators (e.g., Lochte, 1993).

Study results also have significant practical implications for ratings of

professors' teaching effectiveness. In most universities, student evaluations are key inputs into promotion and tenure reviews. If professors are generally evaluated more negatively in technology-mediated distance learning courses, review committees will need to take this into account. Further, administrators may want to draw on those professors who are evaluated positively in these courses as mentors and trainers for others.

More controlled studies using comparison groups and baseline measurements will help to extend this line of research. Other avenues for future research include longitudinal studies, which might relate students' expectations for distance learning to learning outcomes. Further, we tested only one-way influences on teaching effectiveness, but feedback loops occur; for example, students' attitudes toward technology-mediated distance learning at the end of a semester may affect their comfort levels with their displayed images in subsequent courses. Future researchers may also want to more carefully delineate the range of dependent variables that are key to distance learning. For instance, our dependent variables, although conceptually distinct, were highly intercorrelated. Also, we did not have access to students' course grades or instructors' teaching evaluations, and administrators may be interested in more objective outcome measures.

More generally, models of teaching effectiveness in distance learning should be augmented to encompass further influences, including technical characteristics (such as the number of media used), student characteristics (such as extraversion-introversion; Dillon & Gunawardena, 1995), course characteristics (undergraduate versus graduate), and instructor characteristics (past training and experiences with technology, or past teaching evaluations). For example, the common wisdom is to have distinguished or popular teachers "teach on TV" (Walsh & Reese, 1995). However, will the teachers conventionally deemed best remain the best when they teach via videoconferencing?

Other important issues for practice and research include the design of distance learning environments (Ellis, 1992), emerging technologies supporting distance education (cf. Burroughs, 1996; Cutkosky, Tenenbaum, & Glicksman, 1996; Harasim, Calvert, & Collings, 1996; Soloway, 1995), and cross-cultural implications of technology-mediated distance learning for underserved areas of the world (Utsumi, Boston, Klemm, & Miller, 1997). Further, administrators may want to consider using distance learning technologies for other applications, such as delivering training and courses directly to corporations, conducting multicampus faculty and committee meetings, and publicizing and marketing their universities (Latchem et al., 1994; Walsh & Reese, 1995). These initiatives will help propel schools of business into the 21st century.

REFERENCES

Adelson, B. 1992. Evocative agents and multimedia interface design. In P. Baversfeld, J. Bennett, & G. Lynch (Eds.), ***Proceedings of the Association for Computing Machinery (ACM)***

Special Interest Group on Computer and Human Interaction (CHI) 92 Conference: 351–356. New York: ACM Press.

Alavi, M., Wheeler, B. C., & Valacich, J. S. 1995. Using IT to reengineer business education: An exploratory investigation of collaborative telelearning. ***MIS Quarterly,*** 19: 293–312.

Bandura, A. 1986. ***Social foundations of thought and action.*** Englewood Cliffs, NJ: Prentice-Hall.

Borbely, E. 1994. Challenges and opportunities in extending the classroom and the campus via digital compressed video. In R. Mason & P. Bacsich (Eds.), ***ISDN: Applications in education and training:*** 65–82. London: Institution of Electrical Engineers.

Bruce, B. C., Peyton, J. K., & Batson, T. 1993. ***Network-based classrooms.*** Cambridge: Cambridge University Press.

Burke, K., & Chidambaram, L. 1996. Do mediated contexts differ in information richness? A comparison of collocated and dispersed meetings. In J. F. Nunamaker, Jr., & R. H. Sprague, Jr. (Eds.), ***Proceedings of the Twenty-ninth Annual Hawaii International Conference on Systems Sciences,*** vol. 3: 92–101. Los Alamitos, CA: IEEE Computer Society Press.

Burroughs, R. 1995. Technology and new ways of learning. ***American Society for Engineering Education (ASEE) Prism,*** 4(5): 20–23.

Catchpole, M. J. 1993. Interactive media: The bridge between distance and classroom education. In T. Nunan (Ed.), ***Distance education futures:*** 37–56. Adelaide: University of South Australia Press.

Chidambaram, L., & Jones, B. 1993. Impact of communication medium and computer support on group perceptions and performance: A comparison of face-to-face and dispersed meetings. ***MIS Quarterly,*** 17: 465–491.

Cleveland, P. L., & Bailey, E. K. 1994. Organizing for distance education. In J. F. Nunamaker, Jr., & R. H. Sprague, Jr. (Eds.), ***Proceedings of the Twenty-seventh Annual Hawaii International Conference on System Sciences,*** vol. 4: 134–141. Los Alamitos, CA: IEEE Computer Society Press.

Collis, B. 1995. Anticipating the impact of multimedia in education: Lessons from the literature. ***Computers in Adult Education and Training,*** 2(2): 136–149.

Compeau, D. R., & Higgins, C. A. 1995. Computer self-efficacy: Development of a measure and initial test. ***MIS Quarterly,*** 19: 189–211.

Csikzentmihalyi, M. 1975. ***Beyond boredom and anxiety.*** San Francisco: Jossey-Bass.

Cutkosky, M. R., Tenenbaum, J. M., & Glicksman, J. 1996: Madefast: Collaborative engineering over the internet. ***Communications of the Association for Computing Machinery (ACM),*** 39(9): 78–87.

Daft, R. L., & Lengel, R. H. 1986. A proposed integration among organizational information requirements, media richness, and structural design. ***Management Science,*** 32: 554–571.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. 1989. User acceptance of computer technology: A comparison of two theoretical models. ***Management Science,*** 35: 982–1003.

Dillon, W. R., & Goldstein, M. G. 1984. ***Multivariate analysis.*** New York: Wiley.

Dillon, C. L., & Gunawardena, C. N. 1995. A framework for the evaluation of telecommunications-based distance education. In D. Sewart (Ed.), ***Selected papers from the 17th World Congress of the International Council for Distance Education,*** vol. 2: 348–351. Milton Keynes, U.K.: Open University.

Ellis, M. E. 1992. ***Perceived proxemic distance and instructional videoconferencing: Impact on student performance and attitude.*** Paper presented at the annual meeting of the International Communication Association, Miami.

Fellers, J. W., & Moon, D. K. 1994. Exploring the application of distributed group support systems to distance education. In J. F. Nunamaker, Jr., & R. H. Sprague, Jr. (Eds.), ***Proceedings of the Twenty-seventh Annual Hawaii International Conference on System Sciences,*** vol. 4: 142–148. Los Alamitos, CA: IEEE Computer Society Press.

Fulk, J. 1993. Social construction of communication technology. ***Academy of Management Journal,*** 36: 921–950.

Fulk, J., Schmitz, J., & Ryu, D. 1995. Cognitive elements in the social construction of communication technology. ***Management Communication Quarterly,*** 8: 259–288.

Fulk, J., Schmitz, J., & Steinfield, C. W. 1990. A social influence model of technology use. In J. Fulk & C. Steinfield (Eds.), ***Organizations and communication technology:*** 117–141. Newbury Park, CA: Sage.

Goodhue, D. L., & Thompson, R. L. 1995. Task-technology fit and individual performance. ***MIS Quarterly,*** 19: 213–236.

Gowan, J. A., & Downs, J. M. 1994. Video conferencing human-machine interface: A field study. ***Information & Management,*** 27: 341–356.

Harasim, L., Calvert, T. W., & Collings, T. D. 1996. A networked learning environment for continuing engineering education. ***The BC Professional Engineer,*** 47(2): 9–11.

Hart, P., Svenning, L., & Ruchinskas, J. 1995. From face-to-face meeting to video teleconferencing: Potential shifts in the meeting genre. ***Management Communication Quarterly,*** 8: 395–423.

Hildebrand, J. E. 1995. Videoconferencing in the business curriculum. ***Journal of Business and Technical Communication,*** 9: 228–240.

Hollenbeck, J. R., & Brief, A. P. 1987. The effects of individual differences and goal origin on goal setting and performance. ***Organizational Behavior and Human Decision Processes,*** 40: 392–414.

Hsi, S., & Agogino, A. 1993. ***Creating excitement and motivation in engineering design: Developing and evaluating student participatory experience in multimedia case studies.*** Paper presented at the ED-MEDIA 93 Conference, Orlando, FL.

Introduction to video mediated communication. 1995. Article 4905 of ⟨alt.education.distance⟩ (accessed May 17, 1995).

Isaacs, E. A., Morris, T., Rodriguez, T. K., & Tang, J. C. 1995. A comparison of face-to-face and distributed presentations. In I. R. Katz, R. Mack, L. Marks, M. B. Rosson, & J. Nelson (Eds.), ***Proceedings of the Association for Computing Machinery (ACM) Special Interest Group on Computers and Human Interaction (CHI) 95 Conference:*** 354–361. New York: ACM Press.

Jacques, R., Preece, J., & Carey, T. 1995. Engagement as a design concept for multimedia. ***Canadian Journal of Educational Communication,*** 24(Spring): 49–59.

Kydd, C. T., & Ferry, D. L. 1994. Case study: Managerial use of video conferencing. ***Information and Management,*** 27: 369–375.

Latchem, C., Mitchell, J., & Atkinson, R. 1994. ISDN-based videoconferencing in Australian tertiary education. In R. Mason & P. Bacsich (Eds.), ***ISDN: Applications in education and training:*** 99–113. London: Institution of Electrical Engineers.

Leidner, D. E., & Jarvenpaa, S. L. 1993. The information age confronts education: Case studies on electronic classrooms. ***Information Systems Research,*** 4: 24–54.

Leidner, D. E., & Jarvenpaa, S. L. 1995. The use of information technology to enhance management school education: A theoretical view. ***MIS Quarterly,*** 19: 265–291.

Lewis, J., Whitaker, J., & Julian, J. 1994. Distance education for the 21st century: The future of national and international telecomputing networks in distance education. In Z. L. Berge & M. P. Collins (Eds.), ***Computer mediated communication and the online classroom,*** vol. 3—Distance learning: 13–30. Cresskill, NJ: Hampton Press.

Lochte, R. H. 1993. ***Interactive television and instruction: A guide to technology, technique, facilities design, and classroom management.*** Englewood Cliffs, NJ: Educational Technology Publications.

Martocchio, J. J., & Webster, J. 1992. Effects of feedback and cognitive playfulness on performance in microcomputer software training. ***Personnel Psychology,*** 45: 553–578.

Moore, G. C., & Benbasat, I. 1991. Development of an instrument to measure the perceptions of adopting an information technology innovation. ***Information Systems Research,*** 2: 192–222.

Nahl, D. 1993. Communication dynamics of a live interactive television system for distance education. ***Journal of Education for Library and Information Science,*** 34(3): 200–217.

O'Conaill, B., Whittaker, S., & Wilbur, S. 1993. Conversations over video conferences: An evaluation of the spoken aspects of video-mediated communication. ***Human-Computer Interaction,*** 8: 389–428.

PictureTel Distance Learning. 1996. Available from (http://www.picturetel.com/distlrng.htm) (accessed May 23, 1996).

Rice, R. E., & Aydin, C. 1991. Attitudes toward new organizational technology: Network proximity as a mechanism for social information processing. ***Administrative Science Quarterly,*** 36: 219–244.

Salancik, G. R., & Pfeffer, J. 1978. A social information processing approach to job attitudes and task design. ***Administrative Science Quarterly,*** 23: 224–253.

Sandholtz, J. H., Ringstaff, C., & Dwyer, D. C. 1992. Teaching in high-tech environments: Classroom management revisited. ***Journal of Educational Computing Research,*** 8: 479–505.

Schmitz, J., & Fulk, J. 1991. Organizational colleagues, media richness, and electronic mail: A test of the social influence model of technology use. ***Communication Research,*** 18: 487–523.

Schwartz, R. A. 1995. The virtual university. ***American Society for Engineering Education (ASEE) Prism,*** 5(4): 22–26.

Skinkle, R., & McLeod, K. 1995. ***Video conference technology: A human resources application.*** Student Employment Services, University of Western Ontario.

Soloway, E. 1995. Log on education: Beware, techies bearing gifts. ***Communications of the Association for Computing Machinery (ACM),*** 38(1): 17–24.

State of the art MBA in Canada. 1995. Available from (http://www.onetouch.com/news7.htm) (accessed May 19, 1996).

Storck, J., & Sproull, L. 1995. Through a glass darkly. What do people learn in videoconferences? ***Human Communication Research,*** 22: 197–219.

Trevino, L. K., Webster, J., & Stein, E. 1996. ***Influences on communication media choices, attitudes, and use: A comprehensive field investigation.*** Working paper, Pennsylvania State University, University Park.

Utsumi, T., Boston, R. L., Klemm, W. R., & Miller, J. 1997. ***Low cost teleconferencing for affordable and accessible electronic distance education.*** Paper presented at the International Conference on Information Technology for Competitiveness—Experiences and Demands for Education and Vocational Training, Florianopolis, Brazil.

Walsh, J., & Reese, B. 1995. Distance learning's growing reach. ***Technological Horizons in Education (T.H.E.) Journal,*** 22(11): 58–62.

Webster, J., & Trevino, L. K. 1995. Rational and social theories as complementary explanations of communication media choices: Two policy-capturing studies. ***Academy of Management Journal,*** 38: 1544–1572.

Webster, J., Trevino, L. K., & Ryan, L. 1993. The dimensionality and correlates of flow in human-computer interactions. ***Computers in Human Behavior,*** 9: 411–426

Wetzel, C. D., Radtke, P. H., & Stern, H. W. 1994. ***Instructional effectiveness of video media.*** Hillsdale, NJ: Erlbaum.

Zoltan, E., & Chapanis, A. 1982. What do professional persons think about computers? ***Behaviour and Information Technology,*** 1: 55–68

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USING INFORMATION TECHNOLOGY TO ADD VALUE TO MANAGEMENT EDUCATION

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This article describes the design and delivery of a graduate-level course in management at two universities via advanced information technology, which was used to enable collaborative learning, teaching with transcontinental student teams and multiple instructors, and integration of external expertise. This partnership enriched student learning and expedited faculty and institutional development. We predict that such transformations will increase as schools of management and institutions of higher learning in general seek to add educational value at low cost.

This article demonstrates the viability of an innovation in management education: using information technology (IT) to create value-added partnerships between universities to "leverage" students' learning experience with multiple sets of resources and technology and a broad array of faculty skills and knowledge. The article also demonstrates how information technology can enable collaborative learning and teaching with transcontinental student teams, multiple instructors, and integration of external expertise.

The quality of education in America is under greater scrutiny than ever before. In a recent *USA Today*/CNN/Gallup poll, for the first time voters ranked education first on a list of national priorities, with 67 percent saying education was a major concern (*Washington Post,* 1996). Recent national commissions and scholarly reports on the status of contemporary higher education have criticized the college experience, citing schools' undue emphasis on transmitting fixed bodies of information and failure to develop students' critical thinking and problem-solving skills as particularly troubling weaknesses (Bok, 1986; Boyer, 1987). Students frequently have difficulty integrating and applying knowledge from various domains in practical situations (Kelly, 1982). Yet success in today's job market demands increas-

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ingly effective and efficient learning as the body of relevant information and knowledge escalates (Alavi, 1994).

Faced with these major challenges and declining resources, many institutions of higher education are reexamining and redeveloping their central pedagogies. For example, graduate business and management programs have attempted a number of initiatives, including the residency or apprenticeship model (Leidner & Jarvenpaa, 1995), joint programs between business and engineering schools (*Business Week,* 1994), and team teaching of business courses by professors from different functional areas (e.g., marketing and finance) in business schools.

The same factors that have motivated the formation of information-technology-enabled partnerships in business and industry now seem poised to transform management education. First, universities are under increased pressure to deliver to their students and other constituencies expanded services and greater value with reduced expenditure of capital and human resources. Second, the capabilities and economics of information and telecommunication technologies are rapidly improving. For example, high-bandwidth national and international "electronic highways" augmented by VSAT (very small aperture terminals) and cellular and radio-frequency communications are developing rapidly. Third, communication and computing standards are coalescing, leading to improved connectivity between various technical platforms.

In this article, we first describe the design and delivery of an information systems course at the master of business administration (M.B.A.) level. Students and instructors from two universities were involved. Advanced information technology—videoconferencing, high-speed links to shared databases and file servers, and groupware and an electronic group support system (GSS)[1]—electronically linked two classrooms of students separated by about 2,500 miles.

We then analyze the impacts of the information-technology-enabled partnership on the participating students and faculty, offering insight into planning and developing similar arrangements and suggestions for the effective delivery of value-added multiple-institution management courses.

INFORMATION-TECHNOLOGY-ENABLED TRANSFORMATION OF MANAGEMENT EDUCATION

Changes and innovations in higher education have been reported in scholarly and practitioner journals (e.g., Alavi, 1994; Alavi, Wheeler, & Va-

[1] Groupware refers to information technology tools designed for the support of group decision making and communication processes. The Group Support System (GSS) is a special type of groupware for support of face-to-face group interactions. A GSS environment usually consists of networked computer workstations for participants and a facilitator, a large public screen on which to display the results of group discussion, and software supporting group processes such as brainstorming, voting, and ranking.

lacich, 1994; Leidner & Jarvenpaa, 1993; Norman, 1992; Schlechter, 1990; Shneiderman, 1993; Shneiderman, Alavi, Norman, & Borkouski, 1995). According to Leidner and Jarvenpaa, many of these efforts automate and facilitate information flows between an instructor and students or among students. Such automation efforts have often led to efficiency and effectiveness gains, but they have not led to fundamental changes in learning and teaching. Instead, in many instances, computers and communication technologies have replaced or augmented blackboards and chalk for instructors and paper and pencils for students.

The integration of information technology into management education is by no means trivial, and it is not simply a matter of providing computer access and training to faculty and students. Effective use and integration of computers into classrooms requires a departure from traditional interaction modes so that a technology-mediated learning environment becomes pedagogically effective and even superior to alternative modes of learning and instruction.

A Framework for the Case Study: Information-Technology-Enabled Partnerships

The concept of value-added partnership rests on the assumption that performance can be significantly improved through joint, mutually dependent action (Henderson, 1990). During the last decade, many business organizations have looked beyond their traditional boundaries for cooperative arrangements through which they might obtain efficiencies of scale and scope and competitive advantage. Interorganizational arrangements, in the form of value-added partnerships facilitated through information technology (in the form of interorganizational computer systems), have led to new and enhanced products and services, joint marketing programs, operational efficiencies, and revenue enhancements (Cash, McFarlan, McKenny, & Applegate, 1992; Konsynski, 1993).

Four types of information-technology-enabled interorganizational partnerships have been identified: transaction processing, inventory movement, process linkage, and knowledge leveraging (Venkatraman, 1994). Transaction processing consists of the exchange of structured electronic transaction data across organizational boundaries. Examples include EDI (electronic document interchange) for processing purchase orders, invoices, and electronic payments. Though universities may use EDI-style systems to administer student loans and tuition, it is unlikely that these systems will have a major impact on management education per se. The second type, inventory movement, involves use of information technology for moving materials or information about inventories across organizational boundaries. Such partnerships can improve operational efficiency by streamlining information on inventory levels through the supply chain (Venkatraman, 1994). However, this form of partnership is unlikely to have much impact on management education. Process linkage partnerships connect interdependent processes (e.g., design and manufacturing) across organizational boundaries. They may

provide a competitive advantage in the form of product or service differentiation. Process links have existed at institutions of higher education, albeit in nonelectronic forms. For example, community college and state university systems often develop curriculum jointly so that students arrive at universities prepared for upper-division work. The fourth and the most advanced form of partnership is knowledge leveraging, which focuses on sharing and integrating expertise within the partnership through multimedium, information-technology-based links. The expected benefits include development of synergies and delivery to customers of value-added services and products, which in turn may lead to competitive advantage in the form of product or service differentiation.

Knowledge-leveraging partnerships in higher education have been narrowly focused on faculty research activities. Information-technology-enabled partnerships between universities in their core business activity of teaching are relatively rare. Given that universities are in the business of knowledge creation and delivery, they can benefit greatly from the knowledge-leveraging form of partnership for developing and delivering high-quality, value-added courses to students.

In this article, we discuss the formation and outcome of an information-technology-enabled partnership designed to deliver management education by providing a collaborative, geographically and temporally extended learning environment that could not be produced by means of either traditional distance learning or local collaboration between two faculty members. The structure created in this study fills a different need than does traditional distance learning in at least four ways. First, traditional distance learning mainly deals with shortages of faculty and facilities by providing students with remote access to an instructor through television, video teleconferencing, or a correspondence course (Fellers & Moon, 1994). In the information-technology-enabled partnership, two universities used electronic links to enhance the effectiveness and efficiency of learning and teaching processes by combining faculty expertise, student perspectives, and technological resources. Second, in traditional distance learning, instructors dominate communication between themselves and students, usually employing one-way-broadcast videoconferencing. In the project studied, various advanced forms of information technology allowed multiple and dynamic communication flows and knowledge exchanges among students and instructors located at two universities. Third, traditional distance learning mainly focuses on in-class lectures and learning processes. In the focal project, a virtual continuous collaborative learning space (both inside and outside the classroom) was created by means of groupware technologies (described later). Finally, unlike traditional distance learning, which is produced, transmitted, and received with specially designed hardware and software, the studied project maintained openness and portability by employing off-the-shelf, standardized commercial products.

This study focused on the following research questions: (1) How can information technology be used to extend and expand student learning by

creating a value-added partnership in which a course is delivered through two universities' sharing faculty and technical resources? (2) What are some of the outcomes of such an information-technology-enabled partnership for student achievement, learning, and satisfaction for *in-class* learning processes? (3) What are some of the outcomes of this information-technology-enabled partnership on student achievement, learning, and satisfaction for *out-of-class* learning processes? (4) What are some of the outcomes of this information-technology-enabled partnership for the faculty involved in the arrangement? and (5) What are the features and costs of technical platforms for support of such partnerships?

CREATING A VALUE-ADDED PARTNERSHIP

Two large state universities located in the mid-Atlantic and the southwestern regions of the United States were involved in the project. The idea of creating this virtual learning space was developed by two of the authors, who were members of the faculties of two business and management schools and who had shared interests but different backgrounds. They integrated the information-technology platforms at their respective universities to combine their complementary knowledge and expertise in delivering an M.B.A. course in the information systems area.

The project had two layers: in-class learning activities and out-of-class learning activities. The in-class learning activities were a series of lectures by instructors, presentations by guest speakers, and in-class case analyses and discussions conducted in the two interconnected electronic classrooms (described below). The out-of-class learning activities related to a collaborative team project (also described below) supported by an asynchronous groupware technology.

Course Design

The M.B.A. course, Information Technology and Corporate Transformation, focused on the impact and the enabling role of information technology in transforming economic activities, industries, and corporations, as well as work group and individual processes. When the study began, each university already offered a graduate course on information-technology-enabled organizational transformations, though the two courses had different names and were taught from different perspectives. One university approached the topic from an industry and business-organizational view, whereas the other approached it from a more technological and individual-team view. Recognizing this diversity as a strength, the instructors of the two courses sought to create an integrated intellectual package for the students while retaining sufficient flexibility to meet specific, idiosyncratic instructional objectives (e.g., one of the instructors wanted to allocate class time for student team presentations).

A series of face-to-face, telephone, and e-mail discussions between the instructors resulted in 80 percent identical content in the final syllabi, in-

cluding textbooks and reading assignments. Each instructor agreed to lecture joint class sessions on subjects in which he or she had expertise or a special interest. The instructors also planned joint presentations and expert panel discussions in which presenters from throughout the country would participate by videoconference. The two faculty members closely coordinated the content, scheduling, and delivery of the courses at the two campuses. The classes met on the same day and at the same time for a period of two hours and 40 minutes, with 21 students at the mid-Atlantic university and 25 students at the southwestern university.

The faculty members took turns interacting with the students through the electronic links. One of the instructors was highly knowledgeable about macro impacts of information technologies—that is, information technology's impact on markets, industries, and organizational and interorganizational structures. She taught the classes at both sites and led both local and remote classroom discussions on these topics from her home site. The other instructor taught the classes and led the sessions that focused on the topics of his expertise: groupware and technology-mediated group and individual decision-making processes (the micro perspective on IT impacts). This arrangement gave the students access to the core competency of each instructor, thereby delivering greater value to students on both campuses. The expected benefits of this particular approach to course delivery were enhanced student and faculty learning (measured and reported later in the article) and providing experience in the use of advanced information technologies.

Technical Platforms in the Networked Classrooms

Each university had an electronic classroom with a "videowall." An electronic classroom is a specially equipped room with one or more networked computer workstations for the instructor and for each student. The workstations are used to display, store, retrieve, and exchange the information needed during a class for purposes of presentation, analysis, communication, and discussion. A videowall is a collection of large, flat video screens in the front of a room that display both information gathered from students and material contributed by the instructor (e.g., presentation visuals and videotapes). Appendix A gives technical details on the electronic classrooms used in this study.

An electronic classroom can support various models of learning by automating the information flows between instructor and students (Alavi & Yoo, 1995; Leidner & Jarvenpaa, 1995). When equipped with synchronous groupware technology, an electronic classroom can further enhance learning outcomes through collaborative learning (Alavi, 1994; Leidner & Jarvenpaa, 1993).

One of the unique features of this project was that two electronic classrooms at two different universities were linked to create a sense of being in the same classroom at the same time for both students and instructors. Each classroom had electronic access to the networked workstations in the class-

room on the other campus. Students in one classroom could electronically ask questions and participate in ongoing discussions in the remote classroom. Videoconferencing enabled an instructor at one site to present and lead discussions at both sites simultaneously; it also enabled remote experts to be queried and brought interactively into the classrooms. The videowalls enabled simultaneous display of remote presenters and presentation visuals as well as student input. Through data links, students at both universities could have joint group support system sessions through which they could achieve distance collaborative learning. Appendix B gives technical details on the data and video links between the two electronic classrooms.

In-Class Learning Activities

Prior to each session, the instructors coordinated activities and developed an agenda, with one instructor designated as the lead for that particular day. When the course began, the campuses were separated by two time zones. Classes at both campuses were scheduled to run simultaneously, for two hours and 20 minutes, once a week. However, part way through the semester, differences in daylight savings practices decreased the time difference by an hour. The class periods therefore began simultaneously for half the semester and then shifted to a one-hour-and-40-minute overlap for the second half of the semester. The academic calendars at the two campuses also differed slightly. Classes began and ended at the southwestern university a week earlier than at the mid-Atlantic university. The nonoverlapping class time throughout the semester was used to customize the classroom delivery to the local students. For example, as mentioned before, one instructor allocated the nonoverlapping class time to student team project presentations. The study included joint technology-mediated sessions during a ten-week period.

Each joint class session typically consisted of a lecture by an instructor coupled with discussion between instructors, between students and instructors, and among students. For example, an instructor might use presentation visuals simultaneously transmitted to both sites to complement audio and video presence. During discussion, instructors would interact with the remote classroom directly through the videoconferencing link. Students at either site could ask questions electronically through software as well as verbally. The lecturer at the remote site could access a question electronically and then respond verbally using the videoconferencing technology.

Students could participate in electronic discussions in which they could interact with one another within as well as between classrooms. For example, group support systems software at both sites enabled students to brainstorm ideas, discuss issues, organize information, and observe the degree of consensus between the two classrooms. Students at one site could view and comment on results at the other site. Instructors at both sites could then lead an interactive videoconference discussion comparing and contrasting student contributions.

Following each class session, the instructors spoke by telephone to dis-

cuss the results of the class, revisit the syllabi, and outline the approach to take at the next class session. The lead instructor for the upcoming session would then further develop lecture materials and ideas, which could then, as previously noted, be communicated and coordinated.

Out-of-Class Learning Activities

Outside the regular class time, students collaborated on team projects through Lotus Notes, a groupware database and conferencing system for asynchronous communication. The instructors divided the students into four-person teams, with two people from the mid-Atlantic site and two people from the southwestern site on each team. Student teams were asked to analyze a Harvard Business School case and to respond to three specific questions. The total duration of the project was four weeks. At the end of the fourth week, each team prepared a final report. The reports were submitted to both instructors by their local students.

Each student was given an individual identification and access number for the Lotus Notes server computer located at his or her university. The Notes server was replicated several times a day during the course of the project to provide timely information and document exchange and effective group discussion among the remote students. This type of asynchronous groupware technology provided a rather flexible and student-centered learning environment (Leidner & Jarvenpaa, 1995).

ASSESSMENT APPROACH

Case study research is appropriate when research questions involve how, why, or explanatory what questions and when the focus is on a contemporary as opposed to a historical phenomenon (Leidner & Jarvenpaa, 1993; Yin, 1989). Given the exploratory and contemporary nature of the research questions and our desire to investigate information-technology-enabled partnerships in teaching and learning processes, we selected a case study approach.

In our study, the effectiveness of the information-technology-enabled partnership described above was evaluated over a ten-week period along the following dimensions: (1) students' learning in and assessments of the in-class activities (i.e., classroom delivery and interactions), (2) students' learning in and assessments of the out-of-class learning activities (i.e., the joint team project), (3) impact on the instructors, and (4) cost implications.

Case Observations and Measurement Approach

In-class learning experience. Students' learning in and assessments of their in-class experiences were measured through a 23-item questionnaire consisting of two sets of items. The first set gauged students' perceived learning, and the second set measured their evaluation of their experience in the networked classrooms. The questionnaire was administered to both classes three times throughout the semester, at weeks 4, 9, and 13. Students'

perceived learning was measured by five-point Likert-type scales developed by Alavi (1994) and derived from Hiltz's (1988) instrument designed to evaluate the effectiveness of an on-line course.

The students' midterm exam scores were also used as a proxy measure of their learning achievement. The students at both universities took the same midterm exam. However, because of differences in the two universities' schedules, different final exams were given to the classes on different dates. Each instructor developed four questions for the midterm exam on the topics that he or she had taught to the classes. The exam consisted of multiple-choice, true-false, and essay questions.

Students' assessments of the classroom experience were measured as their evaluations of student-student and instructor-student interactions. Student-student interactions were evaluated by four items derived from Green and Taber's (1980) questionnaire for measuring group process satisfaction. Because each instructor's interaction with students at the remote site was through electronic links, the Media Social Presence Questionnaire (Short, Williams, & Christie, 1976) was used to measure the perceived quality of these interactions. Social presence refers to the subjective quality of a medium that determines the salience of persons in an interaction (Short et al., 1976). Media having high social presence will allow warmth, personality, sensibility, and sociability to be communicated. For example, face-to-face communication has high social presence, whereas paper-based communication (e.g., a business letter) has low social presence.

The learning and classroom assessment questionnaire items were subjected to separate principal component analyses followed by "varimax" rotations. Results indicated the presence of two coherent factors with acceptable alpha reliabilities for the learning items. These factors, displayed in Table 1, consisted of self-reported (perceived) learning (six items, $\alpha = .92$) and participation in the learning process (three items, $\alpha = .79$). Two coherent factors with acceptable alpha reliabilities were derived from the classroom assessment items. These two factors, also displayed in Table 1, were social presence (four items, $\alpha = .91$) and classroom evaluation (five items, $\alpha = .87$).

Out-of-class learning experience. We used a similar approach to measure the students' learning and assessment of out-of-class learning activities. At the end of the project, a questionnaire consisting of two sets of items was administered to students at the mid-Atlantic university. Students' perceived learning was measured by three items adopted from Alavi (1994), including improvement in critical thinking skills, problem-solving skills, and understanding of basic concepts. Students' assessments of out-of-class learning experiences were measured by ten items from the satisfaction measure developed by Green and Taber (1980). All the questions had five-point Likert-type response scales.

A factor analysis followed by a reliability test was performed for these items. Results indicated the presence of three coherent factors with acceptable alpha reliabilities. The first item, labeled as self-reported (perceived) out-of-class learning, was composed of three items ($\alpha = .64$). Two coherent

TABLE 1
Factors and Items Associated with In-Class Learning

Learning		Classroom Assessment	
Factors and Items	**α**	**Factors and Items**	**α**
Self-reported (perceived) learning	.92	Social presence	.91
Learning factual material		Interaction with instructor was (human/mechanical)	
Gaining a good understanding of basic concepts		Interaction with instructor was (cold/warm)	
Learning to identify central issues		Interaction with instructor was (unsociable/sociable)	
Learning to interrelate important issues		Interaction with instructor was (personal/impersonal)	
Developing ability to communicate clearly about the subject		Classroom evaluation	.87
Ability to integrate facts and develop generalizations		Satisfaction with quality of class (very low/very high)	
Participation in learning	.79	Teaching process (effective/ineffective)	
Participated in class discussion		Discussion process (confusing/understandable)	
Confident in expressing opinion		Today's class (uncoordinated/coordinated)	
Valuing others' points of view			

factors with acceptable alpha reliabilities were derived from the students' out-of-class learning assessment items: satisfaction with out-of-class learning processes (five items, $\alpha = .93$) and satisfaction with participation in out-of-class learning activities (five items, $\alpha = .79$). Table 2 displays these items.

Impact on Instructors

The impact of the networked classrooms on the two instructors was investigated through classroom observations and periodic interviews by research assistants. The instructors also tracked critical incidents throughout the semester.

OUTCOMES AND DISCUSSION

Impact on Students

Local students were defined as those who were in the same location as the lecturer–discussion leader. Distant students were those who were at the site remote from the lecturer–discussion leader and participated in the lecture and discussions by means of videoconferencing and data links.

Analysis of covariance[2] results (Table 3) indicated no significant main

[2] Each of the universities had its own cultural climate and idiosyncratic student body demographics. To control statistically for any possibly preexisting systematic differences (e.g., classroom climate, student or faculty expectations, motivation levels, electronic classroom lay-

TABLE 2
Factors and Items Associated with Out-of-Class Learning

Factors and Items	α
Self-reported (perceived) out-of-class learning	.64
Gained understanding of basic concepts	
Enhanced problem-solving skills	
Enhanced critical thinking skills	
Satisfaction with out-of-class learning process	.93
Effective/ineffective	
Coordinated/uncoordinated	
Fair/unfair	
Confusing/understandable	
Satisfying/unsatisfying	
Satisfaction with participation in out-of-class learning activities	.79
Made suggestions	
Showed attention and interest	
Gave information	
Asked others for thoughts and opinions	
Asked for suggestions from others	

or interaction effects on perceived learning associated with time or student location (local or distant). Furthermore, the midterm exam contained a common section with four questions, two from each instructor. The common section was blindly scored by a third person, and the scores were compared. Results of analyses of the breadth and depth of the student responses indicated no significant differences in their scores, in turn indicating an apparently equally good mastery of the material presented in the face-to-face and videoconferenced lectures.

These results are consistent with those of studies that have established the comparable effectiveness of technology-mediated distance learning and traditional face-to-face learning. For example, studies comparing distance and face-to-face learning environments involving adult students have shown no significant differences in learning achievement measured as student test scores (Gibbons, 1989; Hoyt & Frye, 1972; Puzzuoli, 1970). Similarly, a study investigating learning in videoconferenced classes showed that students who were remote from the instructor learned as much as those face-to-face with the instructor, as measured by their exam grades (Storck & Sproull, 1994).

No significant main or interactive effects of time and location on students' participation in the learning process existed. This may be attributed to the specific arrangements between the two classrooms. Both instructors were present at all but one of the videoconferenced class sessions. The instructor located with the students receiving the videoconferenced lecture had the

outs and configurations), we used university as a covariant in analyzing the impact of the information-technology-enabled partnership on the students.

TABLE 3
Results of Analysis of Covariance: The Impact of In-Class Learning Activities on Students[a]

Variable[b]	SS	*df*	*F*
Perceived learning			
Main effects			
Time	6.88	2	3.44
Location	2.40	1	2.04
Two-way interactions			
Time × location	0.34	1	0.34
Participation in learning			
Main effects			
Time	6.30	2	1.90
Location	2.70	1	1.63
Two-way interactions			
Time × location	0.27	1	0.16
Social presence[c]			
Main effects			
Time	7.18	2	3.59
Location	13.831	1	8.54**
Two-way interactions			
Time × location	0.28	1	0.17
Classroom evaluation[c]			
Main effects			
Time	0.59	2	0.41
Location	2.49	1	3.46**
Two-way interactions			
Time × location	0.03	1	0.05

[a] University was used as a covariate to control for preexisting differences in the classes on the two different campuses.

[b] Time was survey administration at the 4th, 9th, or 13th week of the semester. Location was located with the instructor or distant from the instructor.

[c] University was a significant covariate at the $p < .01$ level.

* $p < .05$

** $p < .01$

opportunity to interact with his or her students as well as with the remote instructor, thus maintaining the students' interest and engagement in the classroom activities. Furthermore, a special question-and-answer software developed at one of the universities and made available to students on both campuses provided an easy-to-use channel for interaction and feedback between the instructor and the distant students, enhancing their participation.

Location had significant main effects on media social presence and class evaluation. The distant students rated the social presence of the videoconferenced sessions lower than did the students located at the same site as the instructor. Furthermore, the distant students evaluated the classroom dynamics less favorably than the students located with the instructor. These findings can be interpreted in terms of both social presence and medium

richness theories. Face-to-face learning environments support faster feedback, greater personal focus, and a larger variety of information cues than do videoconferenced environments (Alavi et al., 1995). From a normative medium richness perspective, then, face-to-face learning environments offer the richest communication and highest social presence, which possibly leads to a more positive classroom evaluation. These findings are consistent with those of previous studies of distance learning. For example, a study comparing distance learning by means of televised instruction, face-to-face instruction, and a combination of the two methods showed that as face-to-face contact increased, so too did the learners' satisfaction with the instructional approach (Davies, 1988). In another study (Boyer, 1987), students taking televised courses indicated a strong preference for traditional face-to-face courses.

Overall, the students gave their learning in the networked classrooms relatively high ratings (a grand mean score of 4.41 out of a maximum of 5). The lower social presence of the videoconferenced lectures and the less favorable class evaluations the distant students gave did not seem to be linked to low learning or to differences in learning between local and distant students. In general, the students viewed the electronic learning space and the connection between the classes as an effective and positive educational experience. This is evident from the students' comments on the expertise and quality brought into the classrooms. For example, one student commented. "It would seem that, having the opportunity to listen to speakers from around the country, we are given a learning opportunity that we would not have had. The multiparty videoconferencing was quite interesting and educational." A second student said, "The ability to 'bring people in' through multipoint conferencing is very important as it may serve as one of the most important advances in providing a quality education at a reasonable price in the future." Another student comment was that "videoconferencing brings more information from other sources which add depth and interest to course material."

Out-of-class learning experience. Out-of-class learning experience enabled through Lotus Notes was assessed by a questionnaire after the team project was completed. As there were no control groups who performed similar learning exercises in face-to-face meetings, we made no attempt to contrast the electronic learning space to a traditional learning space; instead, it was our intention to show the viability of such technology-mediated learning environments. Thus, we compared individual students' scores on self-reported (perceived) learning, satisfaction with the out-of-class learning experience, and satisfaction with participation in out-of-class learning activities with the midpoint of the questionnaire through a series of *t*-tests. The midpoint indicated neutrality. Because the students had not been exposed to such an electronic learning space before the project, a neutral response could indicate that their experiences were comparable to those in traditional learning environments (i.e., they did not see advantages or disadvantages to the electronic learning environment). A positive response, however, could in-

dicate that they perceived their learning experiences in the electronic learning environment to be more positive than those in traditional environments.

The *t*-test results indicated no significant effects on self-reported out-of-class learning. In other words, the average *t* of 3.12 (out of 5) did not differ significantly from 3. Thus, in an explicit comparison, the perceived outcomes of electronic learning and traditional face-to-face collaborative learning[3] did not differ. This observation is consistent with Alavi and colleagues' (1995) research finding that distant students perceived information-technology-enabled collaborative learning environments as flexible and effective.

Face-to-face collaborative learning has been shown to be a highly effective learning strategy (Alavi, 1994; Johnson & Johnson, 1975; Johnson, Johnson, & Smith, 1991). However, face-to-face collaborative learning has geographical and temporal limits. An electronic learning space similar to the one created for this project can make collaborative learning expandable over time and geographic distance. In fact, in some situations, an electronic learning space may be the preferred alternative for achieving the pedagogical objective. For example, for study of cross-cultural issues, an electronic learning space may facilitate learning by allowing interaction among students and instructors of different cultural backgrounds. Knoll and Jarvenpaa (1995) reported positive learning outcomes from virtual student team exercises in which groups of students from several different countries worked together through e-mail to report how business people in different countries perceived information technology.

Significant differences were found for students' satisfaction with out-of-class learning experiences and for participation in out-of-class learning activities. Although one cannot rule out the possibility of "novelty" effects, the findings suggest that an electronic learning space of the type studied can increase student participation and satisfaction with out-of-class learning exercises. These findings may be partially attributable to the asynchrony of the out-of-class interactions among the student teams in the electronic learning environment, which seemed to have facilitated participation while requiring less coordination than face-to-face meetings.

Overall, the students positively evaluated their learning experiences in a virtual electronic learning environment. However, our case study observations are preliminary and need to be substantiated with both laboratory and field studies.

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[3] A collaborative learning environment is one in which, through conversations, discussion, and debate, participants offer explanations, interpretations, and resolutions to problems. It leads to active construction of knowledge and development and internalization of meaning and understanding. Furthermore, group discussions reveal different views and enable a more comprehensive conception and understanding to emerge (Alavi et al., 1995).

TABLE 4
Analysis of the Impact of Out-of-Class Learning Activities on Students

Variable	Mean	s.d.	*p*
Perceived learning	3.12	0.75	0.53
Satisfaction with out-of-class learning experiences	3.94	0.69	0.00
Satisfaction with participation in out-of-class learning activities	3.93	0.51	0.00

Impact on Instructors

This project had both cognitive and professional impacts on the participating faculty members. The partnership between the instructors in this study let each of them leverage his or her resources for the benefit of the students in both locations. The instructors did not use the technology as an excuse to take every other session off. Instead, both participated fully in all but one of the class sessions. Although they had much in common, each was familiar with a substantial body of academic work that was unfamiliar to the other. Provided with material from both bodies of work, the students gained a deeper understanding and a higher-quality learning experience.

The instructors reported learning a great deal from each other as time passed. Each developed a broader appreciation of topic areas without laborious independent study. Each became familiar with a new body of literature and new levels of analysis through collaborating with the other.

Each instructor also had a personal network of professional contacts who were willing to join the class electronically to enrich the exchange of ideas. The students benefited from contact with people they would not otherwise have been able to meet. For example, the instructors used the videoconferencing system to create geographically distributed discussion panels of experts. In one instance, a session on electronic commerce culminated in a three-way videoconference. The instructors elicited opinions and generated discussion among three industry experts through a series of questions and dynamic video interactions among the three sites. Overall, the instructors were able to deliver enriched course content efficiently and effectively while expanding their own knowledge bases.

There were also cognitive impacts on the instructors. Several different technologies and approaches (e.g., electronic display of lecture notes through a high-speed modem connection, videoconferencing links, and a group support system) were applied relatively simultaneously, which raised the "cognitive load" on the instructors in the course of instruction.

The atmosphere in each electronically linked classroom differed from the atmosphere in a single room with the same number of students. Balancing attention between the two classes was a challenge. The instructors had to consciously reach out to the remote class to prevent those students from feeling abandoned while maintaining appropriate personal interaction with the physically present group. The social merging of the groups was non-

trivial; each had a certain sense of its own culture and an individual flavor that needed to be addressed. However, these problems were not overwhelming. The initial discomfort and cognitive load on the instructors rapidly dissipated during the semester as they became more familiar with the students and the multiple technologies. The technologies were adjusted to better support the instructors.

At the beginning of the project, little was known about where to place video cameras to create a comfortable classroom dynamic between the two sites. In a regular classroom interaction, students can see both the instructor and one another. At the beginning of the project, each site used only one camera, which could be trained either on the instructor or on the students, but not on both. Students at one site or the other occasionally felt ignored as camera angles favored the instructor. Interestingly, it was not always the remote class that felt slighted. In the first session or two, because the instructors experienced cognitive stress learning how to interact with the remote class, they tended to address themselves to the camera and microphone, focusing their attention primarily on the remote students. However, they quickly adopted a theater-in-the-round approach, addressing themselves first to the local students before them and then to the remote students through the camera. Nevertheless, teaching in this multimodal environment was initially rather challenging for the instructors, because it required quick adjustment between spontaneous interaction with the local students and more structured and orchestrated interaction with the remote students (e.g., looking into the camera and speaking loudly and deliberately to ensure effective communication with them). In general, the instructors' cognitive load diminished quickly over time as the technology was stabilized and augmented and as they gained experience teaching in a multimodal technology-mediated environment. This observation is consistent with Abel's (1990) observation that people were able to quickly adapt to the cognitive and physical limitations of a videoconferencing link that connected two research facilities about 600 miles apart.

As the semester progressed, each location added microphones and cameras. Typically, a student or assistant at one site would select which image to send to the remote site, depending on what was happening in the classroom. Two camera arrangements evolved and seemed to lend themselves well to creating a good social presence. First, the single video camera at one of the sites was positioned on top of a monitor that displayed the remote site, providing "video eye contact" between the instructor and the remote students in that looking at the remote classroom displayed on the monitor approximated looking into the camera. The camera and monitor were placed on a wheeled cart and then placed in the back row of the classroom. Thus, looking at the monitor also approximated looking at a student in the back row. Another successful arrangement, at the other site, involved placing on the desk of a local student a tiny second camera pointing at the instructor, who could then directly address the distant students while maintaining good contact with the local students. A graduate assistant kept the tiny camera

trained on the instructor and determined whether to transmit the image of the instructor or of the class. The students and instructors reported feeling less self-conscious with the technology as the course progressed.

Teaching in an electronic environment required adjustment and openness to change. Use of the technology was inherently exploratory, and it was a continual learning experience for both instructors and students. Each instructor had to provide and/or elicit technical support beyond that normally needed in traditional classrooms. Once the links were stable, the demand for outside support was reduced substantially.

Cost Structure and Implications

Various costs are associated with this kind of endeavor, and some are capital investments. For example, the technological infrastructure and support—computers, networks, and front-screen displays—in the individual classrooms are up-front costs. In this case study, acquisition of the videoconferencing technology was an additional cost borne by one of the institutions (the other institution already owned videoconferencing equipment acquired by a previous project). The videoconferencing units at both sites were portable and thus useful in a number of teaching, research, and administrative circumstances. Over time, we expect that capital investment needs will decline and that technology's flexibility and portability will increase, minimizing the need for dedicated electronic classrooms. For example, portable podiums containing software and hardware platforms for distance learning have recently become available on the market.

Some of the costs were transient and were not expected to recur. For example, special technical help was required to install and test video lines and related equipment. Once lines were installed, videoconferencing was as simple as dialing two telephone numbers. Additional special technical help with some of the data technologies was required but will not be needed again for long-term operations. Continuing operational costs (e.g., telephone and videoconferencing line charges) were maintained at less than $1 per minute of classroom time. The institutions took turns dialing one another to share the line cost.

Offsetting the technological costs were the savings achieved. The total number of instructor hours available to students was increased, as was the accessibility of outside expertise. Getting an hour of an off-site expert's time via videoconferencing is inexpensive compared to the cost incurred in having that person appear live in a classroom.

LESSONS LEARNED

The teaching approach studied here differs from both traditional approaches within institutions of higher learning and previous collaborative approaches. Historically, partnerships and collaboration have been more local, often occurring between instructors at a single institution. Technology, when present, has been in the form of internal classroom support or,

on occasion, distance education using video broadcasts. Some classrooms have used two-way video to complement face-to-face interaction, but none, to our knowledge, have put together the full array of audio, video, and data technologies in the geographically separated context illustrated in this study. This array facilitated synergies and benefits beyond those achievable through more limited arrangements.

Local collaboration does not tend to create the same degree of synergy. Resources tend to overlap, and class times tend not to overlap. Students can take classes from many instructors at the same university but cannot usually take classes from instructors at other institutions. Collaboration between separate institutions provides cross-fertilization of ideas while naturally sustaining diversity. Easy interaction between local and remote locations enables students, instructors, and institutions to cope effectively with the rapid expansion of knowledge and the need for quick adaptation to change. Multi-institutional collaboration is both a way for teachers and students to generalize at a time when fields are becoming more specialized and a way of encouraging students to integrate fragmented foci.

Mitroff and Linstone noted that successfully teaching critical thinking and creative problem solving depends on being able to examine situations from multiple perspectives. They went on to say that "because of long and arduous years involved in mastering a particular discipline, the academic/professional mind easily becomes the prisoner of a particular way of viewing the world" (1993: 57). The use of multiple instructors and of teams of students from varied backgrounds and settings stimulated the unbounded systems thinking that Mitroff and Linstone deemed critical to the future of education. No university can afford to assign two leading professors to a single class. Yet two universities can afford to assign one professor each to a class. Electronic links between the two classrooms in this case made an otherwise infeasible classroom experience practical.

In this study, we have been able to illustrate how combining technologies can help create a virtual learning space. Though the classrooms used were specially constructed, the technologies used are readily available off-the-shelf and are relatively easy to install. We anticipate that, in the near future, more portable computers (e.g., wireless personal digital assistants) and a wider variety of video services will make the technologies used in the studied case more prevalent and accessible. For example, portable projector liquid-crystal technology with internal light sources performs better than "three-gun" video projection technology at a fraction of the price. We see the project reported here as opening new opportunities in the use of information technology in education. The project taught a number of lessons, which we list below under the headings of technology, application, and implications.

Technology

(1) High levels of technical support are necessary to launch such a project. It takes time and talent to install and stabilize video and data technologies. (2) Audio, video, and data technologies are complementary and

synergistic. Audio is important for communication coordination, video for richness and presence, and data for content dissemination, gathering, and exchange. (3) Having only a single camera requires difficult presenter/audience viewing trade-offs and attention to placement that multiple camera options can alleviate. (4) Video service providers and increasingly commonplace standards (e.g., integrated services digital network [ISDN] and H.320) make it easier for users to manage multipoint hookups and video interfaces.

Application

(1) A relatively high level of logistical and content coordination between instructors is required. The need to structure and carefully think things through increases as the degree of coordination rises. (2) Applying technology, transferring slides, and transitions between remote presenters require continual attention and dynamic coordination between the presenters and technology. (3) Learning and research come together synergistically in linked classroom settings. Students, faculty, and institutions all learn while becoming actively involved in exploring concepts and removing uncertainties. (4) Students (especially those with information systems interests) enjoy actively figuring out how to make the technology effective. (5) Busy executives, who usually cannot afford the time to appear in person and who increasingly have readily accessible videoconferencing capabilities, respond enthusiastically to invitations to speak to classes through videoconferencing links.

Implications

(1) Students' learning experience is enriched by the increased level of expertise and variety of perspectives and experiences brought into the classroom by multiple instructors, guest speakers, and other student groups. Students have a relatively high degree of tolerance for the inevitable technical glitches, if these are turned into learning opportunities. (3) The cognitive load on the instructors increases greatly, especially in the beginning of such a project. Instructors must balance their attention between students at the two sites, using different technological resources for each form of contact. (3) Student attention at remote sites is enhanced by the more direct involvement and feedback attainable through data links (e.g., the question-and-answer software developed at one of the universities) supplementing audio and video links. (4) Value-added partnerships can be enabled and sustained in an integrated technological environment that otherwise would be difficult, if not impossible, in more limited technologically supported domains. (5) Support for institutional innovation flows from the business and government communities as a consequence of projects of this type. Organizations can appreciate the difficulties and are extremely interested in results leading to more effective use of technology in education and training contexts.

SUMMARY AND CONCLUSION

The value-added management course delivery reported in this study enriched students' learning experience and expedited faculty and institu-

tional development. The most immediate impact observed was on the classroom dynamics and the learning and teaching processes. Specific process changes involved distance learning and collaborative teaching between the two instructors and outside experts. Changes in the underlying learning-teaching and classroom-delivery processes led to changes in faculty skill requirements as well as to a need for new staff skills. In this case study, for example, both faculty members needed to adjust to the increased information-processing load during lectures and to learn to use the technology effectively to deliver material to the remote site. Furthermore, development, operation, and maintenance of the technical platforms needed specialized staff support.

Our prediction is that as institutions seek to adapt to changes in an increasingly complex and dynamic world, they will increasingly use information-technology-enabled higher education of the form reported in this case study in order to add value to student education with relatively low overall cost.

Over the coming years, universities will face many challenges to the one-course, one-semester, one-instructor, one-site traditions of today's educational systems. No university can employ every good instructor, and no university can maintain every useful perspective on a domain. No student can attend every university. We feel that the information-technology-enabled value-added partnerships illustrated in this study help address these challenges in a cost-effective and synergistic fashion that enhances the quality of education for students, faculties, and institutions.

REFERENCES

Able, M. J. 1990. Experiences in an exploratory distributed organization. In J. Gallager, R. Kruat, & C. Egido (Eds.), ***Intellectual teamwork:*** 489–510. Hillsdale, NJ: Erlbaum.

Alavi, M. 1994. Computer-mediated collaborative learning: An empirical evaluation. ***MIS Quarterly,*** 18: 159–174.

Alavi, M., Wheeler, B. C., & Valacich, J. S. 1995. Using IT to reengineer business education: An exploratory investigation of collaborative telelearning. ***MIS Quarterly,*** 19: 293–312.

Alavi, M., & Yoo, Y. 1995. Education in the information age: The case of an electronic classroom. In J. F. Nunamaker, Jr., & R. H. Sprague, Jr. (Eds.), ***Supplemental proceedings of the Twenty-eighth Annual Hawaii International Conference on System Sciences: Advanced tutorial on electronic support for learning.*** Los Alamitos, CA: IEEE Computer Society Press.

Bok, D. 1986. ***Higher learning.*** Cambridge, MA: Harvard University Press.

Boyer, E. L. 1987. Toward school-college collaboration. ***Thought and Action,*** 3(2): 7–18.

Business Week. 1994. Now comes the corporate triathelete. January 31: 71–72.

Cash, J. I., Jr., McFarlan, F. W., McKenny, J. L., & Applegate, L. M. 1992. ***Corporate information systems management*** (3rd ed.). Homewood, IL: Irwin.

Davies, D. 1988. Computer-supported cooperative learning systems: Interactive group technologies and open learning. ***PLET,*** 25(3): 205–215.

Fellers, J. W, & Moon, D. K. 1994. Distance education in the future—Exploring the application of distributed group support systems. In J. F. Nunamaker, Jr., & R. H. Sprague, Jr. (Eds.), ***Proceedings of the Twenty-seventh Annual Hawaii International Conference on System Sciences,*** vol. 4: 142–148. Los Alamitos, CA: IEEE Computer Society Press.

Gibbons, M. P. 1989. ***The effectiveness of technology applied to instruction: A summary of the research literature.*** Center for Communications, San Diego State University, CA.

Green, S. G., & Taber, T. D. 1980. The effects of three social decision schemes on decision group process. ***Organizational Behavior and Human Performance,*** 25: 97–106.

Hiltz, R. S. 1988. ***Learning in a virtual classroom: A virtual classroom on EIES: Final evaluation report,*** vol. 1. Newark: New Jersey Institute of Technology.

Johnson, D. W., & Johnson, R. T. 1975. ***Learning together and alone: Cooperation, competition, and individualization.*** Englewood Cliffs, NJ: Prentice-Hall.

Johnson, D. W., Johnson, R. T., & Smith, C. A. 1991. ***Cooperative learning: Increasing college faculty instructional productivity.*** School of Education and Human Development, George Washington University, Washington, DC.

Kelly, J. B. 1982. A primer on transfer of training. ***Training and Development Journal,*** 36: 102–106.

Knoll, K., & Jarvenpaa, S. 1995. Learning to work in distributed global teams. In J. F. Nunamaker, Jr., & R. H. Sprague, Jr. (Eds.), ***Proceedings of the Twenty-eighth Annual Hawaii International Conference on System Sciences.*** vol. 4: 92–101. Los Alamitos, CA: IEEE Computer Society Press.

Konsynski, B. R. 1993. Strategic control in the extended enterprose. ***IBM Systems Journal,*** 32(1): 111–142.

Leidner, D., & Jarvenpaa, S. 1993. The information age confronts education: Case studies on electronic classrooms. ***Information Systems Research,*** 4: 24–54.

Leidner, D., & Jarvenpaa, S. 1995. The use of information technology to enhance management school education: A theoretical view. ***MIS Quarterly,*** 19: 265–292.

Mitroff, I., & Linstone, H. 1993. ***The unbounded mind: Breaking the chains of traditional business thinking.*** New York: Oxford University Press.

Norman, K. 1992. Navigating the educational space with HyperCourseware. ***Hypermedia,*** 6: 35–60.

Puzzuoli, D. A. 1970. ***A study of teaching university extension classes by tele-lecture.*** West Virginia University, Morgantown.

Shlechter, T. M. 1990. The relative instructional efficiency of small group computer-based training. ***Journal of Educational Computing Research,*** 6(3): 329–341.

Shneiderman, B. 1993. Education by engagement and construction: Experiences in the AT&T teaching theater. In H. Maurer (Ed.), ***Educational multimedia and hypermedia annual:*** 13–26. Charlottesville, VA: Association for the Advancement of Computing in Education.

Shneiderman, B., Alavi, M., Norman, K., & Borkowski, E. Y. 1995. Windows of opportunity in electronic classrooms. ***Communications of the Association for Computing Machinery, (ACM),*** 38(11): 19–24.

Storck, J., & Sproull, L. 1994. ***Through a glass darkly: What do people learn in videoconferences?*** Working paper, School of Management, Boston University.

Venkatraman, N. 1994. IT-enabled business transformation: From automation to business scope redefinition. ***Sloan Management Review,*** 35(2): 73–88.

Washington Post. 1996. Public shows rising concern over quality of education. January 22: A6.

Yin, R. K. 1989. ***Case study research: Design and materials,*** vol. 5. Newbury Park, CA: Sage.

APPENDIX A
The Electronic Classrooms' Configurations

The Mid-Atlantic Classroom

The layout of the electronic classroom located on the campus of the mid-Atlantic university (from here on referred to as classroom A) is depicted in Figure A (top). The room has 20 workstations for students and 2 workstations for the instructor. The student workstations are recessed into the desks to allow good lines of sight. Each student desk accommodates two chairs, bringing the classroom capacity up to 40 students.

The workstations are IBM 9557-2BA units, each consisting of a 1486 25/50 MHZ multimedia processor, 8 megabytes of RAM, 212 megabytes of SCSI hard disk, and an XGA2 accelerated graphics card (capable of 1,024 × 768 resolution with 256 colors or of 800 × 600 or 640 × 480 resolution with 65,000 colors). The workstations have full multimedia capabilities, including CD ROM, an Action Media II video board with 2 megabytes of RAM, and a Sound Board (IBM M-audio).

In addition to the computer workstations, the electronic classroom is equipped with a wide array of audiovisual devices, including two four-by-six-foot high-resolution rear-projection screens (one is used for videoconferencing), VHS video and CD video disc players, a slide projector, and a video overhead projector. All the audiovisual equipment is switched and controlled through a touch screen at the instructor's desk. A hardware switch on the instructor's desk controls and routes all the signals to and from the student workstations. The switch allows the instructor to display the contents of any student monitor on any one of the large rear projection screens. The hardware switch also allows the instructor to intercept the keyboard and mouse to take control of any student workstation.

The student and instructor workstations are connected through a Novell local area network (LAN). Each workstation is equipped with a 32-bit IBM Ethernet board and is connected to the file server through 10-megabytes-per-second cable and 10 Base T Ethernet. Each workstation also has its own Internet Protocol (IP) address for connecting to the Internet and using Telnet, file transfer protocol (FTP), e-mail, and Mosaic.

The file server is an IBM PS/2 model 95 with 486 33 MHZ, 32 megabytes of RAM, 2 gigabytes of SCSI hard disk, a 32-bit SCSI control card, and a monochrome graphics adapter/monitor. The Novell Netware 3.11 Network operating system is used. The file server can also provide FTP services.

In addition to the LAN capability, the room has two 56 K digital lines and one PictureTel unit that provides wide-area videoconferencing capability. Classroom A is also furnished with two 14.4 bps moderns and analog lines for remote data connections.

Each workstation is equipped with MS-DOS, OS2, and Windows operating systems and has access to a number of commercial software products including a spreadsheet (Quattro Pro), a word processor (Word Perfect), and meeting support systems (GroupSystems and VisionQuest). A software system developed in-house for classroom management and student feedback is also available.

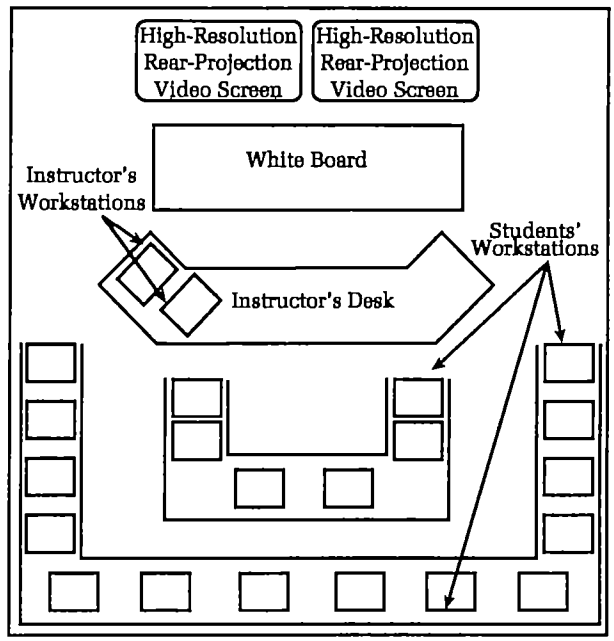
The Southwestern Classroom

The layout of the southwestern classroom (classroom B) is shown in Figure A (bottom). The room has 29 workstations for students and 3 workstations for the instructor. The student workstations are recessed into the desks to allow good sight lines. Nonetheless, the 21-inch monitors in classroom B obstruct the lines of sight more than do the 15-inch monitors of classroom A. Designers of electronic classrooms must trade screen size off against clear lines of sight, not always an easy choice to make. Each student desk accommodates two chairs, bringing the classroom's capacity up to 58 students.

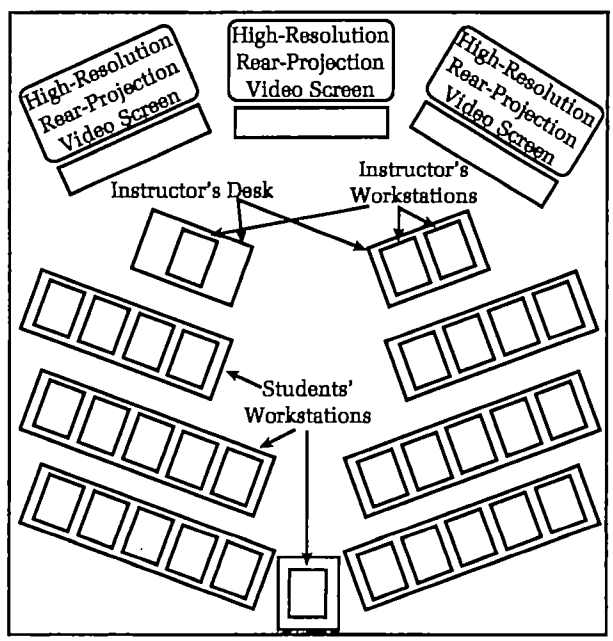
The workstations are IBM 9557-2BA units, each consisting of a 486/66 MHZ chip, 16 megabytes of RAM, 120 megabytes of hard disk, and a graphics card (capable of 1,280 × 1,024 resolution with 16 million colors).

FIGURE A

The Mid-Atlantic Classroom



The Southwestern Classroom



Classroom B also has a wide array of audiovisual devices, including three ten-foot-diagonal high-resolution rear-projection screens, VHS and U-matic video, CD and audio tape players, a slide projector, and a document camera. All audiovisual equipment is switched and controlled through a touch screen at the instructor's desk. Any of the instructor workstations, any of the multimedia display sources, and any incoming videoconferencing signal can be routed to any of the three public screens.

The student and instructor workstations are connected through a Novell local area network. Each workstation is equipped with an "onboard" Ethernet adapter and is connected to the file server through 10-megabytes-per-second cable and 10 Base T Ethernet. Each workstation also has access to the Internet through a network link to a VAX minicomputer.

The file server is an Intel Pentium 50 MHZ, with 32 megabytes of RAM, 2 gigabytes, and a color graphics adapter/monitor. The Novell Netware 3.11 Network operating system is used.

In addition to the LAN capability, the room has two 56 K digital lines as well as integrated services digital network (ISDN) capabilities and one CLI videoconferencing unit using CTX+ Version 9.2.2 compression supporting the H.320 standard that provides wide-area videoconferencing capability. The electronic classroom is also furnished with two 14.4 bps modems and analog lines for remote data connections.

Each workstation in the electronic classroom is equipped with MS-DOS and Windows operating systems and has access to GroupSystems, an electronic group support system. This room also has access to the classroom management system originally developed for classroom A.

APPENDIX B
The Electronic Links between the Classrooms

The PictureTel videoconferencing unit at the mid-Atlantic site and the CLI videoconferencing unit using CTX+ Version 9.2.2 compression at the southwestern site were connected using an ISDN B+d video link actually running at 112K using the H.320 standard. The local area networks at each site were connected via Closeup remote dial-in software using two 14.4K modems at each site to handle remote Powerpoint presentations and the classroom management question-and-answer software developed at the mid-Atlantic university. A similar arrangement was used to provide each site viewing access to group interactions enabled with VisionQuest and GroupSystems group support systems software. An additional phone line for audio support peripheral to the video and data technologies was especially useful for session coordination.

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DESIGNING EFFECTIVE LEARNING SYSTEMS FOR MANAGEMENT EDUCATION: STUDENT ROLES, REQUISITE VARIETY, AND PRACTICING WHAT WE TEACH

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Process design principles from organization science offer insights for constructing learning systems that produce consistent, high-quality management education. We incorporated key process design concepts into a structure for graduate and undergraduate management and organizational behavior courses and then tested predictions using path analysis and comparative measures of dispersion. Results indicate that variety designed into a learning system can overcome extensive individual differences in student inputs and yield uniformly high levels of perceived personal effectiveness, organizational effectiveness, ability to apply course materials, and satisfaction with both course results and the educational process.

Management education must adapt to the changing expectations of important constituents. What was once considered to be excellence in management education no longer suffices. Both new methods and new measures are needed to meet this challenge. This article proposes an approach to designing learning systems that incorporates contemporary management thinking into the design, delivery, and evaluation of courses in management and organizational behavior.

Four views of excellence were dominant among scholars of higher education until the 1980s (Astin, 1985). (1) Educational excellence was defined in terms of reputation, or a shared recognition among educators and the general public that an institution was top tier. (2) Educational excellence was defined in terms of munificent resources. (3) Educational excellence was defined in terms of outcomes, or the after-education accomplishments (e.g., salary, position, graduate degrees) of an institution's graduates. (4) Educational excellence was defined in terms of the content of an institution's curriculum—its diversity, sophistication, rigor, or cultural appropriateness.

More recently, educational excellence has been defined as the creation of effective learning systems (Christensen, Garvin, & Sweet, 1991). For example, the 1985 report to the Business Higher Education Forum concluded that excellence in business education should be defined in terms of ability to foster the following student attributes: attitudes such as expectations of hard

work, personal responsibility, and patience; values such as a desire for self-learning and acceptance of diversity; subjective qualities such as an ability to deal with uncertainty; a high energy level; and knowledge of and skills in business functions. Reflecting these views, we defined high-quality management education as a course or integrated program of study that consistently yields (1) high levels of learning (e.g., increased knowledge, skill, and understanding), (2) high levels of change or intention to change behavior (application of new knowledge and skills), and (3) highly positive reactions (e.g., satisfaction with the course, the method of instruction, and the value of what was learned and intentions to recommend the course to others).

This expanded perspective on educational quality has several important implications. Adopting a systems view means that the conventional boundaries of educational activities should be examined and likely broadened (Senge, Roberts, Ross, Smith, & Kleiner, 1994; Sirvanci, 1996). Similarly, potential student influences on quality outcomes should be examined with a new focus on the multiple roles that students play (Lengnick-Hall, 1996; Schneider & Bowen, 1995). Taking attitudes, values, and subjective qualities into account in course content means that course design must accommodate the complexity of the human beings involved in the system (Waldrop, 1992). Fortunately, research in organization science offers a number of useful insights to aid in this process.

This article presents a novel approach to designing learning systems for management education and tests two of the key propositions underlying this pedagogy. The next section of the article describes conceptual foundations of the learning system design drawn from organization science research. We used these concepts to structure the management and organization behavior courses from which the data were collected. Two key relationships derived from these concepts are hypothesized. Results of the tests of the hypotheses and related analyses are presented and discussed. Despite wide variation in classroom settings, subject matter, and student characteristics, key outcomes were unusually high and surprisingly congruent. Moreover, support for both underlying propositions seems compelling.

CONCEPTUAL FOUNDATIONS OF LEARNING SYSTEM DESIGN

Any learning experience includes four major variables: process, content, teacher, and student (Smith & Delahaye, 1987). The focus of the reported research was on designing the process so that it best accomplished the multiple goals of students and teachers in terms of the content. The emphasis, however, was on students and on increasing their potential to contribute to educational excellence. Recent research suggests that student roles in the educational process should be conceptualized in ways that go beyond traditional views of them as customers for or recipients of education (Lengnick-Hall, 1996; Schneider & Bowen, 1995). In addition to their conventional roles as buyers and recipients, students are the raw materials for education and the primary products of educational transformations; and, most impor-

tant for this study, students are key members of the labor force involved in creating education (Lengnick-Hall, 1996; Sirvanci, 1996).

One of the challenges facing educational institutions worldwide is the increasing diversity of students. The expanding range of individual differences among students increases variety in the raw materials of the educational system. Variations in motivation, time management and learning styles, maturity, and other factors that influence worker performance increase diversity in the segment of the labor force most crucial for achieving educational outcomes. Increased variety in the ways and settings in which students intend to demonstrate the results of their educations creates new challenges for achieving consistent, high quality in student products. Expanded diversity in the preferences and expectations of students increases the challenge for achieving consistent, high levels of recipient satisfaction. This increasing diversity among key aspects of the transformation process conflicts with many of the established prescriptions for achieving high quality that emphasize conformance, uniformity, and a reduction in process variation (Deming, 1986; Juran, 1988).

The first fundamental question to be examined in this study, then, is what range of differences, or how much variety, should a high-quality educational system be designed to accommodate? An interesting answer comes from the design of cybernetic systems and from Ashby's (1956) law of requisite variety. Effective system regulation, defined as consistent, effective outcomes, is only possible if the amount of variation in inputs to a system is matched by equal variation among processes within the system. In other words, if I is environmental inputs to a system (in this case, students), S is the system (in this case, course design), O is desired outcomes (in this case, consistent, high levels of learning, behavioral intentions, and reported satisfaction), and v is the amount of variation, then $O_V \geq I_V - S_V$. That is, the variety in outcomes is greater than or equal to the variety in inputs minus the variety in the system. Only variety in the system can force down variety in outcomes that are due to variety in inputs.

What does this mean for the design of effective learning systems? Individual differences among students as raw materials (e.g., learning styles, cultural orientation, experience, and interests) must be met by equally diverse learning process options (e.g., assignments, application contexts, methods for presenting material) if consistent, high-quality outcomes (i.e., learning and high levels of satisfaction) are to result. In other words, a system must be designed to offer sufficient alternate routes for accomplishing desired educational outcomes to capitalize on the range of individual differences in interests and capabilities found among student "raw materials." Senge (1990) noted that, as the leader in the educational system, a teacher has primary tasks centering on system design, modeling, and explaining, rather than on the more traditional directing and controlling activities. Teachers, he suggested, should be "producers of environments that allow students to learn as much as possible" (Senge et al., 1994: 489). More specifically, he argued that schools should become learning habitats in which

relationships between people are encouraged, each student develops an individual instruction plan, and a variety of "investigating system" options replaces the passive receipt of information (Senge et al., 1994: 487).

Clearly, not all measures of diversity are equally relevant to consider or practical to accommodate. In this study, we examined selected demographic, experiential, and learning style differences among students. Since the focus was on learning, learning style differences were expected to be among the most crucial to consider. By learning style, we mean the ways people learn and how they solve problems and deal with new situations and information (Kolb, 1984). Kolb argued that effective learning requires a four-stage cycle. Each stage of the cycle highlights different learning modes: concrete experience, reflective observation, abstract conceptualization, and active experimentation. An individual's learning style is the combination of the four learning modes. Kolb (1984) identified four learning styles: accommodators, divergers, convergers, and assimilators. Learning styles reflect two dimensions. One dimension, active/reflective, indicates whether individuals learn best by doing or by thinking. The other dimension, concrete/abstract, indicates whether individuals emphasize concrete experience or abstract ideas when they learn.

Accommodators (concrete and active) focus on what works. They often use trial-and-error and get involved with a problem. If the theory doesn't fit the facts, accommodators tend to discard the theory. Divergers (concrete and reflective) rely on careful observation and on taking different perspectives to develop a meaningful gestalt. Convergers (abstract and active) like problem solving and decision making, often relying on deductive reasoning to reach a conclusion. Convergers tend to emphasize technical issues over people. Assimilators (abstract and reflective) rely on inductive logic. Those with this style value logic and precision and enjoy finding a cogent explanation in diverse observations.

These concepts lead to the expectation that if a course design offers variety in the ways for students to learn that equals the range of individual differences in the student inputs to the educational system, important outcomes of the process will consistently indicate high educational quality.

We hypothesize the following:

> *Hypothesis 1. Consistent, high quality in terms of student products and student reactions (outcomes) can be achieved despite high variety in students as inputs if the pedagogical and structural variety in learning activities (transformations) is sufficient to counter the demographic, preferential, and behavioral variety of students (inputs).*

The next question, of course, is how can this be done?

Designing High-Variety Learning Transformations

Teaching and learning are transformations (i.e., changes). When designing a transformation system—a system that converts raw materials into fin-

ished goods—there are generally two options. In one option, design begins with consideration of what needs to be transformed and how the conversion can be accomplished. Thus, design begins with inputs or resources (Barney, 1991) and with an understanding of the technology required for change to take place (Galbraith, 1995; Taylor, 1911; Weber, 1947). Resource-based systems (Barney, 1991; Wernerfelt, 1984) capitalize on resources that are valuable, rare, difficult to imitate, and nonsubstitutable and that an organization knows how to use effectively. Technology-oriented designs typically focus on issues like task sequencing, control, and efficiency (Gerwin, 1979). Resource- and technology-oriented designs promote both efficiency and effectiveness in using a system's core capabilities (Prahalad & Hamel, 1990).

Alternatively, design can begin with consideration of the people who are responsible for doing the work (Lawler, 1992). With this second approach, primary concern rests with the knowledge, skills, abilities, and motivations of workers. Proponents (Deming, 1986; Lawler, 1992; Senge, 1990) have argued that an employee-focused design encourages innovation, change, and problem-solving activities to take place throughout the organization. They contend that links between customers and the work to be done are more direct, and therefore, information is more readily available for making crucial decisions (Avishai & Taylor, 1989). In addition, worker-centered designs encourage learning and growth (Mohrman & Cummings, 1989).

A concern with fit is common to both design options (Galbraith, 1973; Lawler, 1992). Regardless of whether the primary concern is with resources and conversion technology or with those who must implement work activities, effectiveness depends on how well various parts of a system fit together (Miles & Snow, 1984). In the educational setting, an additional communality is evident: students are the primary resource (Lengnick-Hall, 1996; Sirvanci, 1996), the carriers of core technologies such as learning know-how (Prahalad & Hamel, 1990), and the workers most responsible for ensuring the conversion takes place (Christensen, Garvin, & Sweet, 1991; Sirvanci, 1996). Therefore, students are the key for designing variety into a learning system. Concentrating on students allows educational design to focus on the most critical resource and the primary worker, as well as on individual differences in conversion (learning) processes.

The Student as Co-producer: A Key to Managing Diversity and Complexity

Over the past decades, organizations have been required to integrate increasing complexity and diversity into their everyday activities (Johnston, 1991). The result has been a move from command-and-control, hierarchically managed organizations to firms that are flatter, more fluid, team-based, and decentralized. Lawler (1992) called organizations with these characteristics high-involvement organizations. Employees in high-involvement firms are given responsibility for decision making and for accomplishing organizational objectives. According to Lawler, creating a high-involvement firm is a function of providing employees with information (e.g., facts and

results), knowledge (e.g., understanding what needs to be done), power (e.g., discretion, responsibility, and accountability), and rewards (e.g., the benefits resulting from achievement). The benefits of high-involvement workplaces are well documented (e.g., Lawler, 1992; Lawler, Mohrman, & Ledford, 1992; Schneider & Bowen, 1995).

Research (Bowen, 1986; Chase, 1978; Danet, 1981; Lengnick-Hall, 1995, 1996; Lovelock & Young, 1979; Miller & Rein, 1969; Mills, Chase, & Margulies, 1983; Schneider & Bowen, 1995; Ulrich, 1989) suggests that the buyers and users of a firm's outputs can contribute both directly and indirectly to a system's transformation activities in ways that are similar to those conventionally undertaken by employees. One term for this role is co-production. Co-production enables individuals traditionally outside a firm's boundaries, such as customers, to act as quasi employees and to play an important part in transformation activities.

In educational systems, students have no choice but to become co-producers since students are inherently responsible for the learning work that takes place. The key decision, then, is the extent to which student co-production roles are deliberately designed and managed to enhance high-quality outcomes. Student interactions with teachers in classrooms have been similar to the traditional relationship between lower-level employees and managers in command-and-control organizations and have most often been hierarchically determined by the teacher (Christensen et al., 1991). Access to information about pedagogical options and ways to demonstrate performance is limited. Contact with faculty is usually planned, rehearsed, and carefully controlled. Teachers decide whether to respond to or reject suggestions students make. The traditional student role is limited to receiving information and following instructions. Learning, the compulsory co-production activity for students, is assumed to be a likely by-product of these activities, but neither the professor nor the student actively manages it. The student co-producer is not usually expected to manage the overall transformation process. The rationale for this limited student role is similar to the reasons given in the past for limiting the opportunities for lower-level employees to manage themselves, their peers, and their work: insufficient skills, little trust, competing objectives, and a lack of perceived interest on the part of the worker.

We suggest that the ideas guiding Lawler's (1992) high-involvement structure can be applied to external co-producers as well as to traditional employees. To create a high-involvement learning system, student co-producers can be provided with information, knowledge, power, and rewards that enable them to more effectively manage learning transformations. Specifically, students can be given information on course topics, a rationale for course design, and feedback on what they have accomplished. Students can be given knowledge about how to learn (e.g., learning technology), about trade-offs among various choices and behaviors, and about optional ways to master course concepts. Consistent with notions of individual rationality (Hrebiniak & Joyce, 1986), students can be given power to make choices that

are in their personal best interests. Students can be given rewards in terms of an enhanced ability to achieve personal goals (Vroom, 1964).

Senge and his co-authors (1994) not only echoed this theme in their observations of the benefits of empowered, self-directed individuals in a business-oriented learning organization; they also specifically extended these ideas to schools and other learning systems. Self-directed people feel they are doing something that matters. Empowered individuals are more likely to stretch and grow. Involved people feel free to inquire and to question biases and assumptions. Confident people feel free to take risks and experiment. Reported benefits for students include a sense of responsibility for their own educations and reductions in boredom and inattention (Senge et al., 1994: 488). Of additional importance in management education, co-production requires students to rehearse many of the self-management skills that will make them effective employees. Most importantly, we believe that effectively managed co-production is the key to capitalizing on the variety designed into a learning system.

Defining the Student's Co-production Role

Three factors appear to be crucial to becoming an effective co-producer: (1) task clarity, (2) ability, and (3) motivation (Bowen, 1986; Steers & Porter, 1975; Vroom, 1964). Task clarity is influenced most directly by course design and materials. Co-producers must know what they are expected to do and how they are expected to perform in order to be effective (Mills, Chase, & Margulies, 1983). Armed with this knowledge, co-producers are more likely to behave in useful ways.

Worker ability in an educational setting reflects a student's intelligence and skills in key learning activities (e.g., reading, writing, oral presentation). Although education is expected to shape ability over time, for the purpose of this study ability was considered a dimension of individual differences that the learning system must accommodate.

The third factor influencing co-production effectiveness is motivation. Motivation is influenced both by individual differences and by the opportunities created by the way a learning system is designed. Organizational science offers several useful suggestions for motivating students to demonstrate high levels of responsibility and self-management. First, according to goal-setting theory (e.g., Locke & Latham, 1984, 1990), establishing clear, challenging but achievable, measured goals to be accomplished within a specific time is a key to both motivation and high levels of productivity. In their study of goal setting and participation among college students in a classroom setting, Latham and Steele (1983) found a significant main effect for goal setting only. It is not necessary for students to participate in establishing the goals and standards of performance as long as students accept the goals as feasible and desirable (Latham & Steele, 1983; Locke & Latham, 1990; Locke, Shaw, Saari, & Latham, 1981). This formulation suggests that in an educational context, effective goal setting means that students must have a clear understanding of course objectives, means and methods for accom-

plishing target objectives, and measured benchmarks for assessing their progress, and they must accept these objectives as desirable.

Second, the literature on co-production (e.g., Lovelock & Young, 1979; Schneider & Bowen, 1995) suggests several incentives for inducing participation in the production process by individuals other than traditional employees that can be applied to the educational setting. Co-production can result in productivity gains that lower costs. Students who are able to use their time and efforts most effectively can lower the cost of learning. Co-production can provide increased self-efficacy because control is increased. Students who are able to take charge of their learning are expected to have higher self-esteem and confidence than students who feel vulnerable to a hierarchical structure (Danet, 1981). Some co-producers enjoy opportunities for making choices because choices enable them to achieve greater customization. Students who have discretion in course assignments, topics, and other aspects of course design can customize the educational experience to best meet their personal needs and learning goals (Hrebiniak & Joyce, 1986).

Third, the literature of psychological ownership suggests that when employees are given information and influence, they are more likely to develop high levels of commitment and to appropriately direct their efforts (Pierce, Reubenfield, & Morgan, 1991). It seems equally likely that if students, in their roles as co-producers, are given information and discretion, they too will have high levels of commitment and direct their energy toward appropriate learning objectives.

Course design can facilitate co-production effectiveness by clarifying tasks and increasing motivation toward desirable system objectives (Mills et al., 1983). When students become active participants in customizing and activating learning systems, teachers are analogous to team leaders. They serve as coaches and models (Senge, 1990). They provide resources (Deming, 1986), set standards (Garvin, 1988; Locke & Latham, 1990), manage work flows, and provide feedback (Lawler, 1992). Through self-management and self-leadership, students invest their efforts more effectively and efficiently, take ownership of their educational experience (Pierce et al., 1991), and customize the learning process to reflect their personal interests and competencies (Manz & Sims, 1980).

Variety in a learning system can best be achieved through student co-production. Well-designed co-production roles are a particularly effective way for the requisite variety noted in Hypotheses 2a–2e (below) to be realized. Therefore, well-designed student co-production roles will be associated with consistent, high-quality outcomes, and student roles that do not offer the opportunity for effective co-production will be associated with more variety (i.e., both low and high quality) in outcomes. These ideas lead to the following hypothesis:

> *Hypothesis 2a. In a high-variety learning system, consistent, high-quality student products and student reactions (outcomes) can be achieved if co-production roles for stu-*

dents are designed to enable them to effectively access the variety in a transformation system.

Two Important Outcomes of Learning Systems

Looking at students as important resources for learning systems and as potential co-producers contributing to the learning transformation focuses on the input side of the transformation process. Student roles related to system outcomes are equally important to consider. With regard to outcomes, students play two key roles (Lengnick-Hall, 1996): (1) that of customers, or users and buyers of educational services, and (2) that of products, the key results of transformation activities.

The popularity of quality management techniques has encouraged some educators to respond to students as traditional customers only. The conventional role of customers is to state preferences and evaluate what an organization provides (Deming, 1986; Leavitt, 1960). Clearly, one important measure of learning system effectiveness is student reactions. As with other service activities, both the service outcome and the service process are important factors influencing satisfaction (Zeithaml, Parasuraman, & Berry, 1990). Customer satisfaction, as measured by student reactions to a course and its design, are key outcomes to evaluate.

However, differences between human service enterprises and other types of firms suggest that viewing students *only* in a conventional customer role creates two problems. First, it neglects the potentially competing preferences of other important customer groups such as legislatures, businesses who hire graduates, students' families, and the public (Harris & McDaniel, 1993). Second, the conventional view of students as customers neglects their key role as the primary deliverable, or product, of the learning system (Lengnick-Hall, 1996; Sirvanci, 1996).

Evaluating human service systems (e.g., education and health care) is somewhat different from evaluating other types of exchange relationships (Lengnick-Hall, 1995; McDaniel & Morris, 1978). Human change is the primary product, or outcome, of the enterprise, rather than a means to an end. In education, learning and students' improved knowledge and skills are the primary deliverables. Thus, the second outcome, students as products, is as important to assess as conventional views of customer satisfaction when evaluating the effectiveness of a learning system. Changes in knowledge, skills, and abilities are expected to endure beyond a student's affiliation with an educational institution. Knowledge, understanding, and skills are expected to improve with use rather than wear out. Students are the final product of the educational process. As indicated in the introduction, high-quality management education consistently yields high levels of learning and high levels of change or intentions to change behavior, as well as highly positive reactions.

The conceptual framework for the broad research project we pursued is presented in Figure 1. The emphasis for this study was on the learning transformation process (course design) and the student co-producer role.

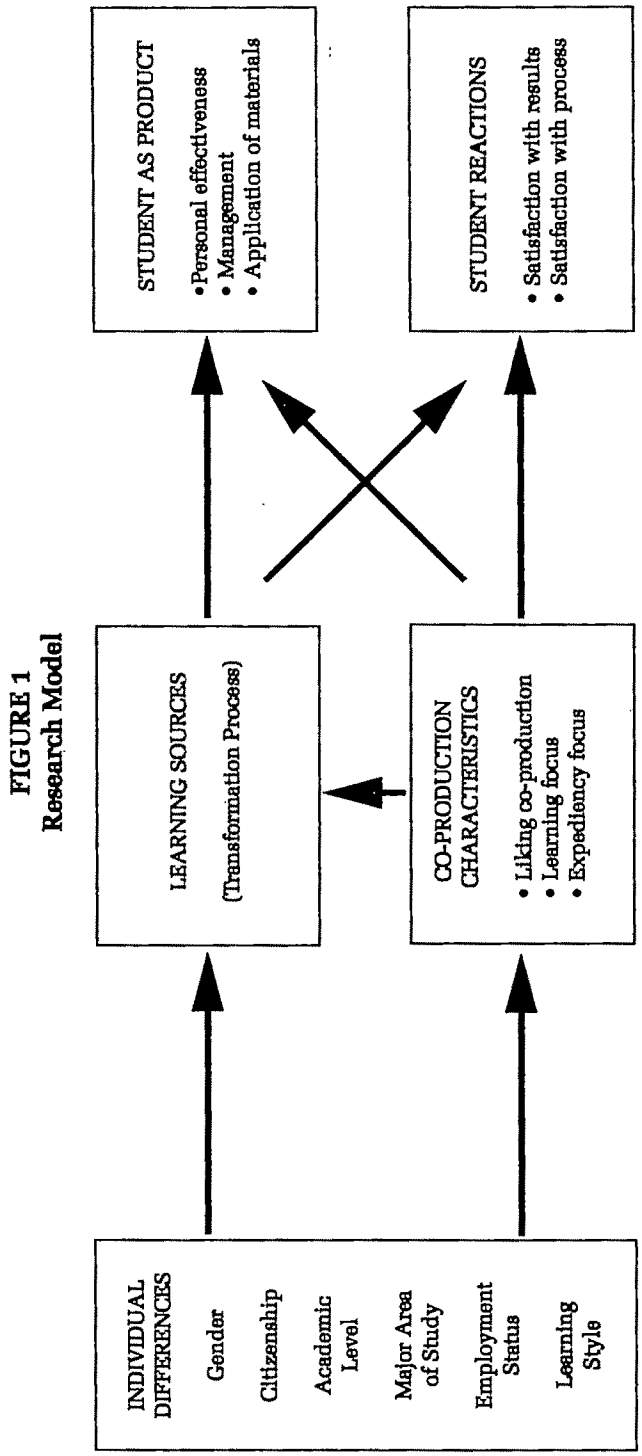


FIGURE 1
Research Model

Outcomes of interest include the student as product and student reactions. We designed the courses used in this study to achieve desirable learning outcomes and to enable a test of hypothesized relationships.

INTEGRATING IDEAS FROM ORGANIZATION SCIENCE INTO THE DESIGN OF A SPECIFIC LEARNING SYSTEM

This research project examined specific means for creating requisite variety in the learning transformation process and for applying what is generally known about co-production to students in a university classroom setting.

The Learning Transformation Process

The learning transformation process embedded in course design is the source of requisite variety in a learning system. Since the courses used in this study ranged from lower-division introductions through advanced undergraduate to graduate courses, the specific assignments and measures of performance were quite different. However, we used standardized approaches to course design to ensure a common way to achieve high variety in learning process options. Seven design features shaped the transformation processes. First, we developed specific learning objectives for each course as a whole, for integrated segments of each course, and for each class session and shared these with students at the beginning of the semester. In the lower-division course, for example, seven to ten specific learning goals were specified for each chapter of the text, a specific learning objective was listed on the syllabus for each class day, and five general goals for the course as a whole were specified at the beginning of the semester.

Second, a variety of ways to master each segment of course material were created, reflecting Kolb's (1984) learning style model. For example, one of the authors developed multiple-choice and true-false study guides to accompany readings for students in the undergraduate courses who learned best using concrete and reflective methods. In all three courses, interview assignments were developed for students who learned through abstract and active modes. All three classes offered intervention assignments (i.e., lead someone to complete a task, make a specific change in a work process) that were designed for students who benefited from concrete and active approaches. Efforts to take advantage of distinct learning modes (i.e., concrete experience, reflective observation, abstract conceptualization, active experimentation) and to encourage students to move through the entire learning cycle (Kolb, 1984) provided the framework for developing assignment and performance measure alternatives. In the undergraduate courses, students were required to choose a package of assignments across different topic areas to create portfolios of work. In the graduate course, students were required to choose assignments from among constrained sets of options.

Third, students were provided with specific performance standards to meet for each assignment and given deadlines for the entire semester. On

study guide applications in the undergraduate courses, for example, students received 15 points, 10 points, or 5 points for achieving 95 percent correct answers, 85 percent correct answers, or 75 percent correct answers, respectively. Students who did not achieve at least 75 percent correct answers did not receive any points for the work. In all three classes, deadlines for every activity in the course were provided the first day of class.

Fourth, training regarding choices and the consequences of selecting various alternatives was provided. In each class, samples of different paths to success in the course were presented and explained. In addition, learning styles and work habits were discussed.

Fifth, only a core set of activities was specifically mandated in each course. However, performance standards for completing the course and for earning a good grade were sufficiently high that students were required to select a portfolio of other tasks and experiences to demonstrate that they had both engaged in learning activities and had mastered the material. In the lower-division course, a maximum of 46 percent of the points needed to achieve an "A" could be earned from completing required assignments. In the upper-division course, a maximum of 63 percent of the points needed for an "A" could be earned through required work.

Sixth, we designed learning activities, the syllabi, and the classroom experiences to resemble a high-involvement workplace environment (Lawler, 1992). Information, knowledge, and power were given to students to enable them to earn rewards based on their own decisions and performance. Seventh, feedback on mastery of course concepts was frequent (occurring in some courses every class session) and comprehensive, and both the faculty member leading the course and peers in the classroom originated feedback.

Combined, these seven design features provided opportunities for students to effectively undertake all stages of the learning cycle (Kolb, 1984). In-class activities (e.g., role play, group assignments, formal presentations, case analyses) provided opportunities for active experimentation, concrete experience, and reflective observation. Mastery applications (e.g., written industry-structure analyses, interpretations of entrepreneurship profiles, and memos on case materials) were integrative and provided opportunities for reflective observation, abstract conceptualization, and active experimentation. Reading and writing assignments (e.g., multiple-choice, true-false, and short-essay study guides and exams) offered opportunities for reflective observation and active experimentation. Each overall class provided the opportunity to engage in a variety of learning transformation options.

Elements of Co-production

Drawing from Lawler's (1992) work with high-involvement firms, we identified three aspects of co-production that we believed had a strong influence on students' abilities to access and effectively capitalize on the variety offered in the design of a course. These three elements were (1) a desire to engage in co-production, (2) a learning focus in co-production, and an expediency focus in co-production.

Desire to engage in co-production. As discussed previously, motivation is a key factor influencing the effectiveness of co-production activities. Students who enjoy taking responsibility for customizing their educations, who like deciding whether to work alone or in groups, and who want to select how they will learn and what vehicles they will use to demonstrate their performance are expected to be more effective co-producers than students who do not want such responsibility (Steers & Porter, 1975).

A number of factors shape motivation toward co-production. Some students, like some employees, welcome the challenge offered by self-management, and others see structuring the educational experience as someone else's (i.e., the teacher's) responsibility (Lawler, 1992). Not all students are equally confident of their ability to make wise choices regarding co-production. Less confident students may prefer to have such decisions made for them. Students enter a class with different levels of experience in alternate course designs. Their early socialization experiences in a classroom setting may have shaped their receptivity toward co-production in learning environments. It seems quite plausible that the seeds of an interest in co-production in the classroom can be planted or uprooted during a student's formative years. In addition, students at the upper-division or graduate level may have experienced greater variety in course design and learning opportunities than freshmen. This experience enables advanced students to know which learning processes work well for them and which learning processes are less effective for them (Mills et al., 1983). Advanced students may also feel more competent in the co-production role and therefore, more willing to become co-producers (Schneider & Bowen, 1995).

Learning focus in co-production. Students enroll in a course for different reasons. Some students, for example, are very interested in learning the subject matter covered by the class; others may enroll only to meet a degree requirement. Students who are interested in the subject matter and oriented toward learning are expected to have goals that are more congruent with those embedded in the learning transformation than students who are less focused on learning, personal challenge, or creative expression. Goal congruence is important for nurturing effective co-production (Locke, Latham, & Erez, 1988; Senge, 1990).

Expediency focus in co-production. One of the inducements for co-production suggested by Lovelock and Young (1979), Schneider and Bowen (1995), and Lengnick-Hall (1996) is reduced waste and enhanced efficiency and productivity. In the educational setting, efficiency often means students only spend time on activities they consider relevant or related to career or personal goals. Efficiency can also mean convenient scheduling, smooth interfaces with other demands on their time, and large payoffs for investment of time and effort. Co-production offers the opportunity for students to select assignments and course activities that fit well with other life and school demands on their time and attention. It also offers the opportunity for students to select those assignments that allow them to more readily apply course material in a specific work setting.

One of the key factors constraining students' time is their employment status. Many of the students enrolled in the courses included in this study were employed part- or full-time. A positive relationship may exist between employment and a tendency to focus on expediency in co-production choices.

Although efficiency is beneficial in a manufacturing setting, it is not always desirable in a learning environment (Christensen et al., 1991). If expediency becomes a primary concern for students and dominates their choices as co-producers, their satisfaction with a course may be high, but their quality as products of the educational process may be lower.

These ideas lead to the following refinements of Hypothesis 2a:

> *Hypothesis 2b. In a high-variety learning system, there is a positive relationship between students' liking their roles as co-producers and both the quality of student products and the level of student reactions.*
>
> *Hypothesis 2c. In a high-variety learning system, there is a positive relationship between co-production activities that emphasize learning and both the quality of student products and the level of student reactions.*
>
> *Hypothesis 2d. In a high-variety learning system, there is a positive relationship between co-production activities that emphasize expediency and student reactions.*
>
> *Hypothesis 2e. In a high-variety learning system, there is a negative relationship between co-production activities that emphasize expediency and the quality of student products.*

Co-production and the Learning Transformation Process

In summary, effective co-production requires task clarity, worker ability, and motivation (Bowen, 1986; Steers & Porter, 1975). Task clarity is achieved by instructors' providing detailed descriptions of course activities and assignments and specific standards for performance. Worker ability is enhanced by providing students with frequent feedback and self-diagnostic information, by coaching students in decision-making strategies, and by providing resources for self-improvement. Factors pertaining to task clarity and worker ability are specific components of course design. Motivation is achieved by allowing students to customize a course to meet their needs within clearly articulated parameters of curriculum requirements. Giving students both the opportunity and the responsibility for determining how they are going to meet course requirements gives them information, knowledge, power, and rewards.

First Outcome: The Student as Product

Like any human service activity, a business-learning system is designed to produce changes in students. Three types of improvements are especially

important: (1) improvements in personal actions, skills, and abilities such as time management, collaboration skills, and communication abilities, (2) improvements in a student's ability to understand organizations and to achieve such organizational goals as applying theory to real-life situations, predicting what will happen, and behaving effectively at work, and (3) improved intent to apply what has been learned to the job or one's personal life. Ideally, students not only learn new ideas and skills, but also change their behavior and the behavior of others as a result of the educational experience. In the redesigned learning system studied here, all four stages of the learning cycle were incorporated into the learning transformation process (Kolb, 1984). If this diversity were sufficient to absorb the variety in student input characteristics, all students would be expected to report significant gains in skills and activities and strong intentions to transfer their training to the workplace.

Second Outcome: Student Reactions

Two elements of satisfaction are important to measure in any service or human service enterprise: satisfaction with the results of the activity and satisfaction with the way in which the service was delivered (Schneider & Bowen, 1995; Zeithaml et al., 1990). People are more loyal and more likely to purchase a product or service if they believe that it meets their needs precisely and that they will get a good return on their investment (Perkins & Reynolds, 1988; Porter, 1985). Perceptions of quality can be quite different from the tangible reality of features, options, or satisfaction with performance (Berry, Parasuraman, & Zeithaml, 1988; Bitner, Booms, & Tetreault, 1990). If the diversity of a learning system is sufficient to absorb the variety in student input characteristics, students are expected to consistently report high levels of satisfaction with both the results of courses and the learning process.

METHODS

Sample

Respondents in this study were 263 students enrolled in five different sections of three different management courses at an urban midwestern university. The courses were Introduction to Business (n = 104) and Strategic Management (n = 43), both undergraduate courses, and Organizational Behavior (n = 116), a graduate course. The sample included men and women, international and domestic students, business majors and nonbusiness majors, students who worked full-time or part-time and unemployed students, and undergraduates and graduates. Table 1 shows the demographic breakdown of the sample. Two different instructors (the authors) taught these courses. One instructor taught the graduate course, and the other taught both the lower- and the upper-division undergraduate course.

TABLE 1
Characteristics and Attributes of Respondents

Variable	Number	Percentage
Gender		
Man	125	49%
Woman	130	51
Citizenship		
United States	195	77
Other	60	23
Academic class level		
Freshman	30	12
Sophomore	28	11
Junior	25	10
Senior	56	22
Graduate	116	45
Major area of study		
Business undergraduate	75	28
Liberal arts undergraduate	52	20
Science undergraduate	9	3
Fine arts undergraduate	4	2
Other undergraduate	19	7
Business graduate	91	34
Nonbusiness graduate	15	6
Employment status		
Nonworking	67	26
Working part-time	96	38
Working full-time	91	36
Learning style		
Accommodator	81	31
Diverger	87	33
Converger	49	18
Assimilator	49	18

Course Design

As was described, the courses used in the study incorporated the seven design principles discussed previously in the following ways: (1) specific and comprehensive learning objectives were formalized and shared with students, (2) there were various ways, based on Kolb's (1984) learning study model, for students to learn and demonstrate mastery of each segment of course material, (3) specific timelines and performance standards for all aspects of the courses were provided, (4) options and the consequences of various choices were discussed with students several times during the semester, (5) each course required successful completion of a core set of activities as well as successful completion of a customized portfolio of work and experiences, (6) courses were designed to "model" a high-involvement workplace, and (7) feedback on performance was frequent and comprehensive. Companies choose strategies and ways to invest their resources that capitalize on strengths and reflect the unique goals and interests of their

TABLE 2
Descriptive Statistics for 11 Scales[a]

Scale	Number of Items	Reliability[b]	Mean	s.d.	Variance	Minimum	Maximum
Co-production							
Liking co-production	4	.78	6.07	0.97	0.94	1.00	7.00
Learning-focused co-production	7	.78	5.35	0.88	0.77	2.00	7.00
Expedient co-production	4	.72	5.00	1.08	1.16	1.75	7.00
Learning sources							
Classroom	3	.76	5.29	1.12	1.26	1.00	7.00
Mastery-integration	3	.76	5.08	1.28	1.64	1.00	7.00
Reading and writing	2	.76	5.24	1.22	1.48	2.00	7.00
Student as product							
Personal effectiveness	9	.90	5.07	1.03	1.06	1.00	6.78
Management	6	.90	5.44	1.02	1.04	1.00	7.00
Application	3	.84	5.55	1.09	1.18	1.00	7.00
Reactions							
Satisfaction with results	4	.87	5.59	0.95	0.91	1.50	7.00
Satisfaction with process	3	.86	5.90	1.05	1.10	1.00	7.00

[a] Range of n = 258–263.
[b] Coefficient alpha.

stakeholders (Porter, 1985). In each class, students were encouraged to select specific projects and activities that capitalized on their individual talents and skills and reflected their personal goals and interests and other commitments.

Measures

Three measures were used in this study. First, we used the Kolb Learning Style Inventory (Kolb, 1985) to assess the preferences of each student in regard to four stages of the learning cycle. In the inventory, respondents were asked to rank sets of words to indicate to what extent the words were consistent with their self-perceptions. The way in which respondents ranked the descriptors indicated their view of their reliance on the four different learning modes: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Two measures were calculated from these learning mode scores. First, we computed combination scores by subtracting the concrete experience score from the abstract conceptualization score and by subtracting the reflective observation score from the active experimentation score. These combination scores indicate an individual's preferences for thinking or experiencing and for watching or doing. A positive score on the first measure indicates greater abstraction, and a negative score indicates greater concreteness. A positive score on the second measure indicates an individual is more active than reflective. Next, we integrated these combination scores to categorize respondents' learning styles, with each designated either as an accommodator, a diverger, a converger, or an assimilator. The distribution of the learning styles of the students in the sample appears at the bottom of Table 1.

The second measure was a personal information card filled out by each student at the beginning of the semester. The card collected information on demographic characteristics, employment status, major area of study, and other personal data.

The third measure was a questionnaire we constructed that each student completed at the end of the semester. Nine items pertained to how well expectations of the course had been met. Four or six items (depending on the course) assessed how well students liked having choices in meeting course requirements. Fifteen items inquired about co-production skills and the transferability of course content. Fifteen items assessed motivation, and eight pertained to satisfaction with the course. All items were measured on seven-point Likert-type scales with 7 indicating the most positive responses (very satisfied, to a great extent, strongly agree) and 1 indicating the most negative responses.

Factor analyses were conducted on four subsets of the items from the questionnaire. The four subsets were related to co-production, learning sources, student-as-product, and student reactions. The factor analyses revealed 3 co-production factors, 3 learning sources factors, 3 student-as-product factors, and 2 student reaction factors. These 11 factors became the scales used in the rest of the analyses. We calculated scores on the scales by

taking the mean rating for the items in each scale. The scales are described below, and descriptive statistics appear in Table 2. The actual items are provided in the Appendix.

Co-production scales. These scales describe a student's response to his or her role as co-producer. *Liking co-production* indicates how much students liked being able to make choices regarding types of assignments, number of assignments, and collaboration with other students. *Learning-focused co-production* indicates the extent to which students made choices based on an orientation toward learning. In other words, the scale indicates the extent to which students made choices that they felt were challenging and would allow them to learn. *Expedient co-production* indicates the extent to which students made choices based on convenience and efficiency.

Learning sources (learning system) scales. These scales portray the different opportunities available to promote student learning and represent the variety in the learning system. The *classroom* scale indicates the extent to which students rated classroom activities, such as lectures, class discussions, classroom exercises, and presentations as a source of their learning. *Mastery-integration* indicates the extent to which students rated projects and assignments that were designed to stimulate integrative thinking and promote mastery of complex course concepts as sources of their learning. Finally, *reading and writing* indicates the extent to which students rated reading the course textbooks and completing structured study guides as sources of their learning.

Student-as-product scales. These scales describe three aspects of the student as the final product of the learning system. *Personal effectiveness* indicates the extent to which students rated themselves as having improved their personal effectiveness in such areas as time management, collaboration, writing, and making presentations. *Organizational effectiveness* indicates the extent to which students rated themselves as able to understand and effectively deal with people and events in organizations. *Application* indicates the extent to which students rated themselves as able to apply what they learned in a course to personal and organizational situations.

Reaction scales. These scales measure conventional dimensions of customer satisfaction. *Satisfaction with results* indicates the extent to which students rated themselves as satisfied with the amount of learning they achieved in a course. *Satisfaction with process* indicates the extent to which students rated themselves as satisfied with the types of assignments that were available, the range of assignments that were available, and the number of assignments that needed to be completed.

Analyses

We conducted a variety of analyses to explore the hypotheses. First, we compiled frequency distributions of the demographic and learning style variables to examine the variety of inputs (individual differences among students) into the educational system.

Second, we calculated correlation coefficients between the combination

scores derived from the Kolb Learning Style Inventory and the learning sources scales to explore possible relationships between variety in inputs and variety in the educational system. If measures of students' combination learning scores were correlated with learning sources, we could conclude that specific variations in the inputs were matched by equally specific variations in the system.

Third, we calculated correlation coefficients to examine relationships between input characteristics (e.g., gender, class level, employment status, nationality, major, and learning style) and the student-as-product and student reaction (outcome) scales. If the variety in the system were equivalent to the variety in the inputs, the result would be completely consistent outcomes and, therefore, no correlations between inputs and outcomes. Additionally, we conducted analyses of variance to assess potential differences in the student-as-product and student reaction scales associated with each course. Again, if the variety in the system were sufficient to completely accommodate differences in course topic or level, we would expect no relationship between course and level and the outcome measures.

Fourth, we conducted *F*-tests to compare variety in the system with variety in the outcomes, calculating these ratios by comparing the variances for the learning sources scales to the variances for the student-as-product and student reaction scales. If requisite variety accurately applied to learning systems, and if we were able to achieve sufficient variety in the system to meet the variety in inputs, variances in the outcome scales would be significantly smaller than variances in the learning sources scales (variety in the system). Significant *F*s would indicate this.

Fifth, we examined the relationships between co-production roles and outcomes via path analysis, using LISREL 7 to calculate path coefficients representing the effects of liking co-production, learning-focused co-production, and expedient co-production on the personal effectiveness, organizational effectiveness, application, satisfaction-with-results, and satisfaction-with-process scales.

RESULTS

As can be seen from Table 1, there was tremendous variety in the demographic and learning-style characteristics of the students who participated in this study. There is little question that variety in inputs to the learning system was quite high.

Variety in Inputs and Variety in the System

Table 3 contains the correlations between the two combination scores for learning style (concrete experience/abstract conceptualization and reflective observation/active experimentation) and the three learning sources scales. As can be seen, there were few strong relationships between positions on the two constructs and classroom activities, mastery-integration applications, and reading and writing. This finding is not surprising since, as was

explained in the section describing the design of the learning system, we designed each of the learning sources to allow students with several different learning styles to benefit. For example, in-class activities offered opportunities for active experimentation with various situations, for observing others and drawing inferences, for testing ideas against reality, and for problem-solving practice.

Two of the coefficients, however, do suggest relationships between these continua and learning sources. Students who indicated they relied more heavily on reflection than on action gave significantly higher ratings to the reading and writing scale. This result indicates that students who learned by reflecting on observations rated structured reading and writing activities as particularly helpful to their learning. Although this relationship was not predicted, it is consistent with learning theory. In addition, high scores on the action/reflection scale were associated with higher ratings of the mastery and integration exercises as a source of learning. Again, this unpredicted finding is consistent with learning theory in that these applications tended to be experiential, requiring students to make decisions and take action.

Variety in Inputs and Consistency in Outcomes

Ideally, the variety in a system would be sufficient to overcome the variety in both demographic inputs and specific course topics and levels and therefore to absorb any potential relationships between individual or course differences and the outcomes of interest. As the correlation analysis shown in Table 4 indicates, there were a few significant relationships between input variables and the outcome measures. Closer examination of the relationships indicates that they are, for the most part, easily explained. Business majors, for example, would have a far easier time finding opportunities to apply management and organizational behavior concepts than nonbusiness majors. Furthermore, since mean ratings on all the outcome measures were uniformly high, many of the differences found between demographic, learning style, and course groups may not be meaningful in a practical sense, despite their statistical significance.

No relationships were found for gender. International students rated

TABLE 3
Correlations between Learning Style and Learning Sources Measures[a]

	Learning Sources		
Learning Style[b]	**Classroom**	**Mastery-Integration**	**Reading and Writing**
Abstraction vs. concreteness	−.05	.11	−.05
Active vs. reflective	.03	.14*	−.16**

[a] Range of n = 254–261.

[b] For each contrast, higher values indicate the first term. Thus, higher = abstract, lower = concrete, and higher = active, lower = reflective.

* $p < .05$

** $p < .01$

TABLE 4
Correlations between Input Characteristics and Outcome Measures[a]

	Outcome Scales				
Input Characteristics[b]	Personal Effectiveness	Organizational Effectiveness	Application	Satisfaction with Results	Satisfaction with Process
Gender	−.08	−.05	−.03	−.08	−.05
Citizenship	−.17**	−.09	−.07	−.06	.03
Major area of study	−.02	.09	.21**	.11	.04
Employment status	−.28**	−.06	.07	−.09	.03
Academic level	−.10	.14*	.33**	.12	.04
Diverger	.20**	.08	−.10	.01	.02
Assimilator	−.18**	−.14**	−.05	−.10	−.10
Converger	−.08	.03	.13*	.03	.09
Accommodator	.02	.00	.03	.05	.00

[a] Range of n = 254–261.

[b] Variables were coded as follows: gender, man = 1, woman = 0; citizenship, U.S. = 1, other = 0; major, business = 1, nonbusiness = 0; employment status, full-time = 1, part-time = 0, unemployed = −1; academic level, freshman = 1, sophomore = 2, junior = 3, senior = 4, graduate student = 5; and diverger, assimilator, converger, and accommodator, yes = 1, no = 0.

* $p \leq .05$

** $p \leq .01$

what they learned in terms of *personal effectiveness* more highly than did the domestic students. Differences in starting points may explain this finding. The international students may have learned more about such aspects of personal effectiveness as how to manage their time, take charge of what they learned, express opinions and ideas, and select tasks on which to work because this was a relatively novel opportunity for them in an academic setting. The domestic students may have entered the courses with more proficiency in self-management. As indicated, business majors noted a greater ability to apply what they learned in the courses than did majors in other fields. Greater opportunity, both in current and future jobs, to apply what they learned in business courses may explain this finding.

Students who were employed either full- or part-time rated their personal effectiveness more highly than did unemployed students. This finding may reflect the greater opportunities that these students may have had to test their learning in real work settings.

Looking at learning style, we found that divergers rated their personal effectiveness higher than did nondivergers. One possible explanation is that the course design forced students to make decisions and reach closure within a fairly constrained period of time. Since divergers often experience difficulty coming to conclusions, this format may have encouraged them to develop new, and particularly useful, skills in this area. Assimilators gave the lowest ratings on personal effectiveness and organizational effectiveness. These findings might be explained by the highly experiential design of the courses. Assimilators learn best through abstract and reflective methods

TABLE 5
Results of Analyses of Variance for the Effects of Course on the Outcome Measures

Outcome Measures	*df*	SS	*F*	Bonferroni *t*-Tests for Differences Between		
				Lower- and Upper-Division Undergraduate	Upper-Division Undergraduate and Graduate	Lower-Division Undergraduate and Graduate
Personal effectiveness	2	10.80	5.28**	*	*	
Organizational effectiveness	2	20.51	10.63**			*
Application	2	62.87	33.08**	*	*	*
Satisfaction with results	2	12.20	7.05**			*
Satisfaction with process	2	4.02	1.85			

* $p \leq .05$
** $p \leq .01$

rather than through concrete and active ones. Assimilators may have been more likely to make choices that were inconsistent with their learning styles because of the novelty of the options that were presented. Convergers rated their ability to apply course material significantly higher than did nonconvergers. Given their problem-solving orientation, perhaps convergers sought out opportunities to apply what they learned. There were no significant differences between accommodators and nonaccommodators on the outcome measures.

The higher the academic level, the higher the ratings on organizational effectiveness and application. Since the graduate students were more likely to be business students, and since such a high proportion of these students were already employed, it seemed reasonable that they would have rated what they learned along these two dimensions more highly.

In analyses of variance, we investigated the effects of the three different courses on the outcome measures. Results, which are presented in Table 5, showed that students in the lower-division undergraduate course gave significantly lower ratings ($\bar{x}$ = 5.04) for personal effectiveness than did the students in the upper-division undergraduate course ($\bar{x}$ = 5.50), who in turn gave significantly higher ratings for this measure than did the students in the graduate-level organizational behavior course ($\bar{x}$ = 4.92). The students in both the lower-division undergraduate course and the graduate course were at relatively early points in their programs of study, but the majority of students in the upper-division course were graduating seniors. Perhaps some of the feelings of confidence and closure that accompany receiving a degree and presenting oneself on the job market influenced these graduating seniors' assessments of their *personal effectiveness.*

Students in Introduction to Business rated their *organizational effectiveness* significantly lower ($\bar{x}$ = 5.10) than did the students in the graduate course, Organizational Behavior ($\bar{x}$ = 5.71). This finding is not surprising, since the introductory course provided a broad overview of many different business topics, whereas the organizational behavior course covered only one specific area of management in depth. The organizational behavior stu-

TABLE 6
Results of *F*-Tests Comparing Variances in Learning Sources with Variances in Outcome Scales

	Outcome Scales				
Learning Sources	Personal Effectiveness	Organizational Effectiveness	Application	Satisfaction with Results	Satisfaction with Process
Classroom	1.19	1.21	1.06	1.38[a]	1.15
Mastery-integration	1.55[a]	1.58[a]	1.39[a]	1.80[a]	1.49[a]
Reading and writing	1.40[a]	1.43[a]	1.25	1.63[a]	1.35[a]

[a] Exceeds the critical value for *F* of 1.27.

TABLE 7
Correlation Matrix for Co-production and Outcome Scales[a]

Variable	1	2	3	4	5	6	7	8
1. Liking co-production								
2. Learning-focused co-production	.38**							
3. Expedient co-production	.01	−.01						
4. Personal effectiveness	.38**	.49**	.01					
5. Organizational effectiveness	.33**	.46**	−.15**	.60**				
6. Application	.33**	.40**	−.20**	.30**	.53**			
7. Satisfaction with results	.53**	.49**	−.13*	.48**	.60**	.57**		
8. Satisfaction with process	.60**	.41**	−.03	.39**	.26**	.34**	.59**	

[a] The range of n = 251–261.
* $p \leq .05$
** $p \leq .01$

dents may have felt they received more specialized instruction on how to be effective in organizations.

Ratings for the *application* outcome measure were significantly different across the three courses. This finding is also not surprising, given the different levels of the three courses. There were likely fewer opportunities for the students in Introduction to Business ($\bar{x}$ = 5.00) to see ways to immediately apply what they had learned than for those in Strategic Management ($\bar{x}$ = 5.46). The graduate students in Organizational Behavior ($\bar{x}$ = 6.07) were likely to have had the greatest opportunities for immediate application since most were already working full-time in business firms.

There was one small but significant difference between the lower-division undergraduate students ($\bar{x}$ = 5.32) and the graduate students ($\bar{x}$ = 5.78) for the satisfaction-with-results scale. Since satisfaction with results measures the amount of learning that took place, this difference may reflect the fact that a graduate course in a specialized management area provides much deeper knowledge then a lower-division survey course. There were no significant differences in satisfaction with process by course.

Variety in the System and Consistency in Outcomes

To examine whether meeting variety in inputs with variety in the system would produce consistency in outcomes, we compared the variances in the learning sources scales with the variances in the student-as-product and student reactions scales. If the concept of requisite variety effectively applied to learning systems, we expected variances in the learning sources scales to be significantly larger than the variances in the outcome scales. We calculated *F*s and compared them to a critical value of *F*. Those *F*s that exceed the critical value present significant differences in the variances being compared. Table 6 shows these values and their significance.

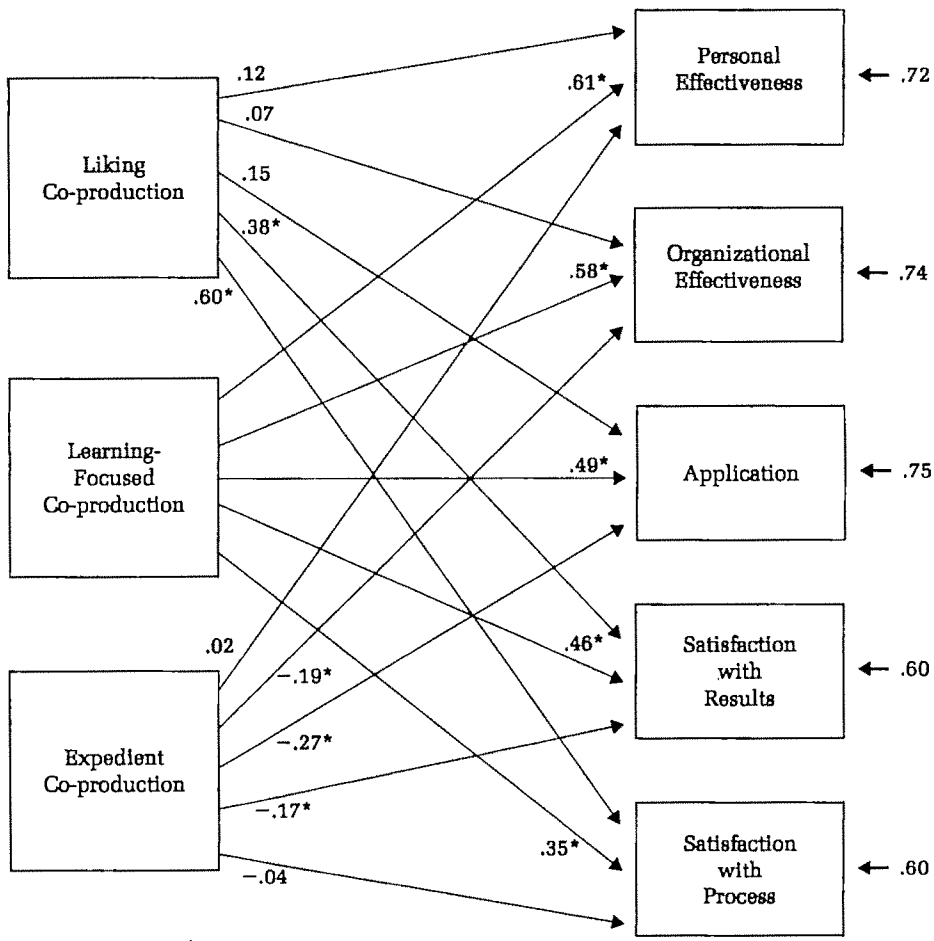
As can be seen, in all cases the variances in the learning sources scales exceeded the variances in the outcome scales and, in most cases, the differences were significant. These findings, which suggest that variety in the educational system can and does produce consistency in both the product (the student) and the satisfaction level that the customer (again the student) feels, support Hypothesis 1.

Co-production and the Outcomes of Interest

We assessed the relationships between the co-production scales and the outcome scales by calculating path coefficients based on the correlations among the scales. The path coefficients appear in the diagram in Figure 2, and the correlation matrix for these scales appears in Table 7.

As can be seen from the path diagram, each of the outcome scales is predicted from each of the co-production scales. The magnitudes of the coefficients indicate that learning-focused co-production is an important positive predictor of each one of the outcome scales. In other words, students who reported that they chose assignments on the basis of what they thought they could learn from doing them felt that they improved in the areas of

FIGURE 2
Path Diagram with Coefficients Predicting Outcome Scales from Co-production Scales[a]



[a] Range of n = 251–261.
* $p \leq .05$

personal effectiveness, organizational effectiveness, and applying what they learned. These students also rated themselves more satisfied with the results and with the type, range, and number of assignments used in the class than those who did not base co-production choices on a learning focus. These findings provide support for Hypothesis 2b.

Liking co-production predicted only the two satisfaction scales. This finding indicates that those who reported that they liked having choices in co-production felt more satisfied than those who preferred not to have such co-production choices. This finding makes sense in that those who like

having choices are much more likely to be satisfied with situations in which they are given this opportunity. In contrast, those who like making choices less will be less satisfied with the same situation. These findings provide support for only some parts of Hypothesis 2c.

Expedient co-production predicted organizational effectiveness, application, and satisfaction with results and did so in a negative direction. These relationships indicate that those who based assignment choices on convenience rated themselves as less organizationally effective and less able to apply what they learned than those who did not report expedient choices. This pattern provides support for Hypothesis 2e. There was no relationship between expedient choices and satisfaction with process, and the relationship between expediency and satisfaction with results was negative and significant. These results are contrary to what we expected in terms of student reactions (Hypothesis 2d). We assumed an internal consistency between students' choices and their expectations, predicting that students who made expedient choices would be satisfied with a lower level of learning. These results suggest that students recognize the cost of expediency in terms of their learning outcomes. An important question, then, becomes whether they hold themselves or someone else accountable for the lower satisfaction.

Large and significant portions of the variance in each outcome scale were accounted for by the three co-production scales taken together. The residual variance terms, shown with arrows at the right of each outcome scale, indicate the portion of variance not accounted for by variables in the model.

DISCUSSION

As can be seen from Table 2, the overall response to the redesigned courses was quite positive in terms of both improved student capabilities and student reactions. Despite wide variety in their learning styles, experiences, academic levels, and interests (see Table 1), students were pleased with the courses, reported they had learned a lot, intended to use what they had learned in both their jobs and their personal lives, and intended to recommend the courses to others. As faculty members, we were quite pleased with these outcomes. These results provide support for our first hypothesis, predicting that variety in learning options can reduce variety in important outcomes and lead to more effective learning systems. It should be noted that consistency in outcomes is only really desirable when product quality and customer satisfaction are high. It is seldom desirable to consistently produce a poor-quality product or have consistent but low levels of customer satisfaction. That is why this study further explored how the outcomes of an educational system can be made highly positive as well as consistent.

Table 6, Table 7, and Figure 2 provide insight on whether a high-involvement learning approach (i.e., one including options in learning methods coupled with empowered student co-producers) is an effective vehicle for providing high variety in course design. Table 6 demonstrates that there

was greater variety in the learning system than in the key outcomes. Given the extensive degree of individual differences in student inputs (see Table 1), these results support the idea that the system had sufficient variety to absorb and respond effectively to many important individual differences and produce consistent, high quality across key outputs of interest.

Of perhaps even greater interest are the implications of the results pertaining to co-production dimensions and both the student-as-product and satisfaction measures. As explained previously, co-production on the part of students is unavoidable. Students must make the primary system transformation (learning) happen since they do the learning. At best, faculty can set the stage, provide resources, and facilitate the process. Most often, educational systems have limited the co-production activities available to students to those directly related to this personal internal transformation. This limitation is similar to making employees responsible for following procedures and performing work tasks correctly. In this study, students were empowered to take on decision-making and design roles typically reserved for faculty. Capitalizing on student co-production is similar to enriching jobs in the workplace; it enabled students in this study to be responsible for both planning and doing. Taken together, these results support the second general hypothesis, predicting that educational designs that create effective co-production roles for students will be able to access the pedagogical and structural variety needed to meet the variety in students inputs and consequently promote consistent, high quality across key outputs of management education.

These results suggest several interesting implications for action and further theory development. First, the vast majority of students in the study very much liked having added responsibility and discretion (see Table 2). Student comments revealed that most students enjoyed the self-management opportunities this type of course design required and took this role quite seriously. As Table 7 and Figure 2 show, students who liked the additional co-production responsibilities also tended to be satisfied with both the results (what they learned) and the process (the opportunity to make choices).

Second, the results of this study strongly underscore the importance of fostering a learning orientation among students. Student co-producers who aspired to learn and take on challenging tasks showed greater gains in personal effectiveness, in their ability to manage others and function effectively in organizations, and in their ability to apply what they learned in both personal and work-related settings. Students with a learning focus were also more satisfied with both what they learned and how they learned. This pattern does not come as a surprise, given what scholars know about the importance of goal setting and goal congruence. Fortunately, organization science provides an array of methods for shaping mental models (Senge et al., 1994) and achieving goal congruence between individuals and organizations (Locke & Latham, 1984; Locke et al., 1988). The results of this study suggest that if teachers encourage students to internalize a learning orientation and then empower them to make informed choices about how they

learn, they can enhance both their accomplishments as products of the educational experience and their satisfaction as customers of the learning system.

Third, as more students find they must balance family and work demands and expectations with their student roles, the issue of expediency and convenience becomes increasingly important. The results of this study suggest that when students make choices regarding their learning activities that highlight expediency, the short-term benefits are likely to come at a long-term cost. Expedient choices appear to result in student products who likely will be less effective managers and less able to apply what they have learned. For most students, management education is a means to enhanced career performance long after they leave the classroom. These results suggest that if students focus on ease and convenience in their efforts to reach intermediate educational goals, they may jeopardize their ability to achieve their ultimate career objectives. The implication that expediency also affects students' satisfaction with results should be considered as well. Since student satisfaction can affect the reputation of management programs, it is important to underscore student accountability in this area. Perhaps the link between expedient choices and reduced learning should be explicitly discussed with students early in the semester.

Several limitations of the study are important to note. One, it was not possible to determine the extent to which individual instructors influenced the outcomes. One author taught the graduate course used in the study, and the other taught the undergraduate courses, so the effects for instructor were confounded by academic level and subject matter. Two, the data are perceptual measures rather than objective indicators of performance. Although this characteristic poses little problem for the satisfaction scales, which largely measure perceptual phenomena, objective data would be particularly useful for assessing the student-as-product measures. Unfortunately, adequate objective longitudinal data for assessing the actual performance of students after they completed the courses were not available.

This study suggests useful avenues for future research. First, these findings imply that a high-involvement educational design is highly effective. The next question may be whether it is more or less effective than alternate designs of learning systems. Comparisons with courses using different design premises are needed to answer questions regarding relative merits and disadvantages. Second, research methods that track actual performance before and after completing a course or learning cycle would increase understanding of the relationships between high-involvement course designs and student-as-product results. Third, anecdotal evidence suggests that a high-involvement course design may alter students' expectations regarding the larger learning system. Following the secondary effects resulting from introducing this type of course design within a segment of the curriculum might offer interesting insights into the diffusion of innovation.

The design of management education is continually evolving. As students become both more varied and more sophisticated participants in edu-

cation and consumers of educational goods and services, designing effective courses becomes more challenging. Fortunately, organization science offers many insights regarding the design of complex systems. The results of this study suggest that if teachers apply what they know about complex systems in general to the design of management education systems in particular, they may be able to enhance learning, the likelihood that students will apply what they learn, and student satisfaction with the educational experience, despite competing expectations and diverse abilities.

REFERENCES

Ashby, W. R. 1956. ***An introduction to cybernetics.*** London: William Clowes & Sons.

Astin, A. W. 1985. ***Achieving educational excellence.*** San Francisco: Jossey-Bass.

Avishai, B., & Taylor, W., 1989. Customers drive a technology-driven company: An interview with George Fisher. ***Harvard Business Review,*** 67(6): 107–114.

Barney, J. B. 1991. Firm resources and sustained competitive advantage. ***Journal of Management.*** 17(1): 99–120.

Berry, L. L., Parasuraman, A., & Zeithaml, V. A. 1988. The service puzzle. ***Business Horizons,*** 31(5): 35–43.

Bitner, M. J., Booms, B. H., & Tetreault, M. S. 1990. The service encounter: Diagnosing favorable and unfavorable incidents. ***Journal of Marketing,*** 54(1): 71–84.

Bowen, D. E. 1986. Managing customers and human resources in service organizations. ***Human Resource Management,*** 25: 371–383.

Business Higher Education Forum. 1985. ***America's business schools: Priorities for change.*** Washington, DC: American Council on Higher Education.

Chase, R. B. 1978. Where does a customer fit in a service operation? ***Harvard Business Review,*** 56(6): 137–142.

Christensen, C. R., Garvin, D. A., & Sweet, A. 1991. ***Education for judgment: The artistry of discussion leadership.*** Boston: Harvard Business School Press.

Danet, B. 1981. Client-organization relationships. In P. C. Nystrom & W. H. Starbuck (Eds.), ***Handbook of organization design:*** 382–428. New York: Oxford University Press.

Deming, W. E. 1986. ***Out of crisis.*** Cambridge, MA: MIT Press.

Galbraith, J. R. 1973. ***Designing complex organizations.*** Reading, MA: Addison-Wesley.

Galbraith, J. R. 1995. ***Designing organizations: An executive briefing on strategy, structure and process.*** San Francisco: Jossey-Bass.

Garvin, D. 1988. ***Managing quality.*** New York: Free Press.

Gerwin, D. 1979. The comparative analysis of structure and technology: A critical appraisal. ***Academy of Management Review,*** 4: 41–51.

Gronroos, C. 1994. From marketing mix to relationship marketing: Toward a paradigm shift in marketing. ***Management Decision,*** 32(2): 4–20.

Harris, I. C., & McDaniel, R. R., Jr. 1993. ***Hospitals compete: The question is not "if" but "how."*** Paper presented at the annual meeting of the Academy of Management, Atlanta.

Hrebiniak, L. G., & Joyce, W. F. 1984. ***Implementing strategy.*** New York: Macmillan.

Johnston, W. B. 1991. Global workforce 2000: The new labor market. ***Harvard Business Review,*** 69(2): 115–128.

Juran, J. M. 1988. ***Juran on planning for quality.*** New York: Free Press.

Kolb, D. A. 1984. ***Experiential learning: Experience as the source of learning and development.*** Englewood Cliffs, NJ: Prentice-Hall.

Kolb, D. A. 1985. ***Learning style inventory.*** Boston: McBer & Company.

Latham, G. P., & Steele, T. P. 1983. The motivational effects of participation versus goal setting in performance. ***Academy of Management Journal,*** 26: 406–417.

Lawler, E. E., III. 1992. ***The ultimate advantage: Creating the high-involvement organization.*** San Francisco: Jossey-Bass.

Lawler, E. E., III, Mohrman, S. A., & Ledford, G. E., Jr. 1992. ***Employee involvement and total quality management: Practices and results in*** **Fortune** ***1000 companies.*** San Francisco: Jossey-Bass.

Leavitt, T. 1960. Marketing myopia. ***Harvard Business Review,*** 38(4): 45–56.

Lengnick-Hall, C. A. 1995. The patient as the pivot point for quality in health care delivery. ***Hospital and Health Services Administration,*** 40(1): 25–39.

Lengnick-Hall, C. A. 1996. Customer contributions to quality: A different view of the customer-oriented firm. ***Academy of Management Review,*** 21: 791–824.

Locke, E. A., & Latham, G. P. 1984. ***Goal setting: A motivational technique that works.*** Englewood Cliffs, NJ: Prentice-Hall.

Locke, E. A., & Latham, G. P. 1990. ***A theory of goal setting and task performance.*** Englewood Cliffs, NJ: Prentice-Hall.

Locke, E. A., Latham, G. P., & Erez, M. 1988. The determinants of goal commitment. ***Academy of Management Review,*** 13: 23–39.

Locke, E. A., Shaw, L., Saari, L. M., & Latham, G. P. 1991. Goal setting and task performance: 1969–1990. ***Psychological Bulletin,*** 90: 125–152.

Lovelock, C. H., & Young, R. F. 1979. Look to customers to increase productivity. ***Harvard Business Review,*** 57(3): 168–178.

Manz, C. C., & Sims, H. P. 1980. Self-management as a substitute for leadership: A social learning theory perspective. ***Academy of Management Review,*** 5: 62–73.

McDaniel, R. R., Jr., & Morris, S. A. 1978. ***Management in human service systems.*** Working paper 78–47, University of Texas at Austin.

Miles, R. E., & Snow, C. C. 1984. Fit, failure and the hall of fame. ***California Management Review,*** 26(3): 1–19.

Miller, D. A., & Rein, M. 1969. Participation, poverty and administration. ***Public Administration Review,*** 29(1): 15–25.

Mills, P. K., Chase, R. B., & Margulies, N. 1983. Motivating the client/employee system as a service production strategy. ***Academy of Management Review,*** 8: 301–310.

Mohrman, A. M., & Cummings, T. G., 1989. ***Self-designing organizations.*** Reading, MA: Addison-Wesley.

Perkins, W. S., & Reynolds, T. J. 1988. The exploratory power of values in preference judgments: Validation of the means-ends perspective. In M. J. Houston (Ed.), ***Advances in consumer research,*** vol. 15: 122–126. Greenwich, CT: JAI Press.

Pierce, J. L., Reubenfeld, S. A., & Morgan, S. 1991. Employee ownership: A conceptual model of process and effects. ***Academy of Management Review,*** 16: 121–144.

Porter, M. E. 1985. ***Competitive advantage.*** New York: Free Press.

Prahalad, P. K., & Hamel, G. 1990. The core competence of the corporation. ***Harvard Business Review,*** 68(3): 79–91.

Schneider, B., & Bowen, D. E. 1995. ***Winning the service game.*** Boston: Harvard Business School Press.

Senge, P. M. 1990. ***The fifth discipline: The art and practice of the learning organization.*** New York: Doubleday.

Senge, P. M., Roberts, C., Ross, R. B., Smith, B. J., & Kleiner, A. 1994. ***The fifth discipline fieldbook: Strategies and tools for building a learning organization.*** New York: Doubleday Currency.

Sirvanci, M. 1996. Are students the true customers of higher education? ***Quality Progress,*** 29(10): 99–102.

Smith, B. J., & Delahaye, B. L. 1987. ***How to be an effective trainer.*** New York: Wiley.

Steers, R., & Porter, L. 1975. The role of task-goal attributes in employee performance. ***Psychological Bulletin,*** 81: 434–452.

Taylor, F. W. 1911. ***The principles of scientific management.*** New York: HarperCollins.

Ulrich, D. 1989. Tie the corporate knot: Gaining complete customer commitment. ***Sloan Management Review,*** 30(4): 19–27.

Vroom, V. 1964. ***Work and motivation.*** New York: Wiley.

Waldrop, M. M. 1992. ***Complexity.*** New York: Simon & Schuster.

Weber, M. 1947. ***The theory of social and economic organization.*** New York: Free Press.

Wernerfelt, B. 1984. A resource-based view of the firm. ***Strategic Management Journal,*** 5(2): 171–179.

Zeithaml, V. A., Parasuraman, A., & Berry, L. L. 1990. ***Delivering quality service: Balancing customer perceptions and expectations.*** New York: Free Press.

APPENDIX

Scale Items

Co-production

Liking Co-production

Circle the number that best indicates how you feel about your choices in this course. (1 = strongly disliked, 4 = neutral, 7 = enjoyed very much)

Choosing *type* of assignments
Choosing *number* of assignments
Choosing to work with others or not
Choosing with whom to work

Learning-Focused Co-production

How important were the following considerations when choosing an assignment? (1 = very unimportant, 4 = moderately important, 7 = very important)

The topic looked interesting.
I thought I would enjoy it.
It was different from what I had done previously.
I thought I would learn from it.
I thought I could do a good job on it.
It appeared challenging.
I thought I could be creative on it.

Expedient Co-production

How important were the following considerations when choosing an assignment? (1 = very unimportant, 4 = moderately important, 7 = very important)

It could be completed quickly.

It was worth a lot of points.
It would be easy to complete.
It was due at a convenient time.

Learning Sources

Circle the number that best indicates how you feel about the sources and results of learning in this course. (1 = not at all, 4 = to some extent, 7 = to a great extent)
My learning came from . . .

Classroom
- In-class exercises
- Class discussions
- My classmates
- Lectures

Mastery-Integration
- Experiential applications
- Self-assessments/career guide application
- Personal development plan

Reading and Writing
- Reading the text
- Learning guide applications

Student as Product

Circle the number that best indicates how you feel about the sources and results of learning in this course. (1 = not at all, 4 = to some extent, 7 = to a great extent)
This course increased my ability to . . .

Personal Effectiveness
- Manage my time
- Choose people with whom to work
- Select tasks on which to work
- Predict how I will perform on tasks
- Organize my work
- Work well with others/collaborate
- Take charge of what I learn
- Present or express my opinions and ideas
- Understand my own behavior

Organizational Effectiveness
- Apply theory to real life situations
- Behave effectively at work
- Understand organizations
- Predict what will happen in organizations
- Manage organizational activities
- Manage behavior in organizations

Application
- I have already applied learning from this course to my job or my personal life.
- I expect to use what I learned from this course on the job.
- I expect to use what I learned from this course in my personal life.

Student Reaction

Satisfaction with Results

Circle the number that best indicates how satisfied you feel with each of the following: (1 = very dissatisfied, 4 = neither satisfied nor dissatisfied, 7 = very satisfied)
- The amount you learned in this course
- Amount of learning from the course

Circle the number that best indicates your agreement with each of the following: (1 = strongly agree, 4 = neutral, 7 = strongly disagree)

I learned more than I expected to from this course.

I learned more from this course than from most other courses.

Satisfaction with Process

Circle the number that best indicates how satisfied you feel with each of the following: (1 = very dissatisfied, 4 = neither satisfied nor dissatisfied, 7 = very satisfied)

Type of assignments available

Range of assignments available

Number of assignments required

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THE SOCIAL FABRIC OF A TEAM-BASED M.B.A. PROGRAM: NETWORK EFFECTS ON STUDENT SATISFACTION AND PERFORMANCE

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The present study was an empirical analysis designed to measure the social networks of master of business administration (M.B.A.) students and the networks' relationships to attitudinal and performance outcomes. Results from 250 students indicated that centrality in friendship, communication, and adversarial networks affected both student attitudes and grades. Moreover, an analysis of 62 assigned teams showed that relationships within and between teams also had significant effects on student perceptions of team effectiveness and objective team performance. Implications for student networks and suggestions for future research are discussed.

Traditional program improvement efforts in graduate business education have been largely focused on curriculum design, student selection, and faculty development (Das, 1994; Reilly, 1982). However, in response to increasing criticism regarding students' inadequate development of interpersonal, or "people," skills, recent redesign efforts have included a much greater emphasis on the broader context of the student experience and have moved toward more cooperative and team-based structures. Indeed, recent surveys suggest that most residential master of business administration (M.B.A.) programs have developed initiatives designed to promote student teamwork and cohort development; examples are lockstep course progression, assigned student teams that carry across classes, and outdoor challenge experiences (Byrne, 1995). The increased use of cooperative learning is consistent with changing organizational realities that increasingly require employees to work in teams, to have good interpersonal skills, to process complex information, and to value individual differences.

Graduate programs that have adopted cooperative learning strategies, like assignment to teams, have presumably done so on the premise that such

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strategies will lead to different learning processes and outcomes than will individual learning. The distinguishing feature of cooperative settings is *interaction* among students, and two kinds of influences could lead to a positive relationship between peer interactions and student achievement and attitudes: (1) direct influences on cognitive processes (e.g., verbalizing information to others, restructuring information) and (2) mediating variables thought to create an emotional or intellectual climate conducive to learning (e.g., peer motivation, anxiety reduction; Webb, 1982). The general notion is that the nature of peer interaction in an educational context can significantly influence students' achievement and satisfaction, independent of their course work or instruction (Johnson & Johnson, 1985).

Of course, anecdotal reports from cooperative learning contexts are hardly unanimously positive. As most instructors will attest, students often voice their frustration over cooperative structures (Michaelsen, Jones, & Watson, 1993). Teamwork generally takes longer than individual work and places greater demands on students to coordinate schedules. Talented students may feel burdened by and therefore resist helping marginal performers. The learning process may be undermined if team members rely upon each others' talents rather than learning the material themselves. In short, although there has been a recent groundswell of interest in and support for cooperative learning initiatives, there is also anecdotal evidence to suggest that frustration with program counterparts or team members can lead to lower achievement and negative attitudes.

Clearly, different group interaction patterns may give rise to a variety of satisfaction and achievement outcomes. The necessity for a richer understanding of the nature and consequences of student interaction is increasingly recognized, but we know of no empirical studies that have systematically examined the interaction patterns of individuals and groups in an academic program. We suspect that the lack of empirical work can be attributed in part to the belief that student social networks, however important, are difficult to identify and define and resistant to rigorous measurement and systematic research. To the contrary, we contend that the powerful methodology of social network analysis, developed and refined in studies of social systems by sociologists and anthropologists (Scott, 1991) and more recently applied to organizational phenomena (e.g., Ibarra, 1995; Krackhardt & Stern, 1988), is applicable to emergent social networks in educational programs.

The purpose of the present study, then, was threefold. First, we reviewed the theoretical implications of the social network perspective for education in schools of business, especially for programs that are moving to team-based and cooperative learning approaches. Second, we operationally defined and measured the networks of relationships that might be important to the success of individuals and teams in an M.B.A. program. Third, we empirically investigated relationships between those networks and indexes of student satisfaction and performance, at both a team and an individual level. From a practical standpoint, our aim was to build our understanding of the ways in which students' positions in networks (and patterns of team

relationships) may differ and to inform decisions regarding the ultimate management of student networks.

THEORETICAL IMPLICATIONS OF STUDENT EMBEDDEDNESS IN SOCIAL NETWORKS

Several authors have correctly noted that social network analysis does not stem from a single all-encompassing theory or methodology (e.g., Granovetter, 1979). It would be inaccurate, however, to assume that social network analysis is atheoretical or lacks conceptual substance (Wasserman & Faust, 1994). Freeman (1984) argued that social network methods are a means of formally stating social properties and processes and rigorously defining theoretical constructs. If there is a common thread that unites social network analysts, it would probably be the conviction that the pattern of relations among a set of actors—whether individuals, groups, organizations, or even countries—will explain outcomes over and above the attributes of either the individuals or the set (e.g., Wasserman & Faust, 1994). Moreover, implicit in most social network methods is the idea that individual-level outcomes may be determined by the social structure that transcends the individual's immediate contacts and that outcomes at all levels may be dependent on the social structure.

Social network analyses can be partitioned into a number of conceptual and analytical categories, but two general approaches are particularly important in the study of organizations. One category uses different logical or mathematical algebras to identify roles or positions that are defined by the patterns of relationships that exist among actors in the network. Using these methods, an analyst can group actors who share similar patterns of relationships with others in the network into classifications. A critical assumption in this approach is that roles and positions are determined not only by the attributes of the individuals occupying them, but also by the patterns of relationships they share with other actors in the network. The role classifications identified using these methods have been used to predict similarity in the attitudes or behaviors of the individuals within each class, even when those individuals have had no direct contact with one another (e.g., Burt, 1987).

In contrast to the role-based approach, the second generic approach to network analysis is concerned with the effects of actors' proximity in networks. In this view, an actor's embeddedness in a social network has important implications for a number of outcomes. An employee, for example, who is very central in a workplace network—that is, who has many direct contacts, negotiates relationships between many other actors, has ready access to many others in the network, and so forth—is likely to be regarded as more powerful and prestigious than more marginal actors (Scott, 1991) and is more likely to have disproportionate access to important tangible and intangible resources (Brass, 1992).

We relied on the second category of social network methods in this

study. The specific logic associated with each hypothesis is explicated below, but generally we argue that students' embeddedness in the social networks that pervade all professional educational programs will predict their level of accomplishment at the individual and team levels, as well as their satisfaction with their educations. We tested the embeddedness thesis in three kinds of social networks—friendship, communication, and adversarial—that are important in both educational and workplace settings.

The specific notion of embeddedness we used relies on a measure of "closeness" that captures the embeddedness concept very well. Closeness centrality measures can be conceptualized as the "ease of access to others" (Burkhardt & Brass, 1990: 113). An individual who is maximally close would have direct, unmediated relationships with all other members of the network. In a friendship network, the closest relationship would be that to a direct friend, the next closest would be to a "friend-of-a-friend," and then that to a "friend-of-a-friend-of-a-friend," and so on. We relied on an index developed by Stephenson and Zelen (1989), which takes into consideration all direct (e.g., friend) and indirect (e.g., "friend-of-a-friend," etc.) relations for all members of a network.

Social networks are constructed from particular kinds of relationships, and researchers have increasingly come to rely on defined subsets of relationship types in the study of organizations. Two such subsets have proven to be especially important in predicting many important organizational outcomes—friendship networks and communication networks (e.g., Brass, 1991; Ibarra & Andrews, 1993). Friendship networks appear to overlap considerably with social support and trust networks (Ibarra, 1995; Krackhardt & Stern, 1988), and communication networks, while overlapping with friendship relations, are also indicative of advice relations and other instrumental kinds of relations in organizations. We propose that friendship and communication networks will be similarly important in educational contexts. Moreover, a third network type that has been relatively less studied, but which may be as or more important to the functioning of workplaces and classrooms, is that involving *adversarial* relationships. The three relationship types and their implications for student attitudes and performance are discussed below.

Friendship Networks

An individual who is enmeshed in a friendship network maximizes his or her access to any number of resources that may be important to success in many venues. Perhaps most importantly, the existence of a positive social relationship is in itself a resource, a source of psychosocial support (e.g., Ibarra, 1995) that may be important in dealing with the stresses and strains of negotiating a demanding educational program. Of course, the psychosocial functions of friendships extend beyond serving as buffers against the trials and tribulations of professional life. Centrality in a friendship network maximizes a student's access to social milieus, both directly and indirectly (the student is more likely to consort with indirect acquaintances). Access to

a broad base of psychosocial and social resources is likely to enhance an individual's enjoyment of whatever situation he or she is in. Thus, we would expect that centrality in a friendship network would be related to satisfaction with the educational program.

Centrality in a friendship network may also be instrumentally important to successfully negotiating a professional educational program. To the extent that friends interact frequently, centrality maximizes an individual's access to useful resources. Like communication centrality, which is described later, friendship centrality has implications for access to information; the distinction is that friendship centrality implies somewhat more passive acquisition of information of the sort that diffuses informally through the grapevine. Friendship implies people's seeking each other out to transmit important information (or other benefits; Burt [1992]) that one individual may not be aware of. Centrality in a friendship network may be especially important for "late-breaking" information; a well-developed friendship network could maximize both direct access to information of this nature via students' own acquaintances and indirect access gained through friends of friends. Highly central individuals are also better able to validate the information that flows through informal networks because they are, by definition, relatively close to many other network actors and thus can avoid the noise introduced as information is passed from actor to actor.

> *Hypothesis 1a. Individual centrality in a friendship network will be positively associated with both satisfaction with an educational program and individual and team performance.*

Communication Networks

It is well known that functional communications networks are important to employees of effective organizations (e.g., Rogers, 1979), and there is every reason to believe that the same is true for students in professional schools. Rogers (1979) and others (e.g., Coleman, Katz, & Menzel, 1957) have described in great detail the role that personal networks play in the diffusion of information not only within organizations, but also within whole societies. In the context of this study, communication relationships are more purely instrumental than are friendships. The former connote an active, purposeful search for information relevant to a program. A hypothesized relationship between centrality in a network of instrumental communications and any number of important outcomes has a strong intuitive appeal. In organizations, for example, centrality in communication networks has been shown to be associated with perceptions of power, adoptions of innovations, and access to critical information (Burkhardt & Brass, 1990; Ibarra & Andrews, 1993; Krackhardt, 1990; Rogers, 1979).

Many of the communication processes operating in organizational environments undoubtedly generalize to educational environments as well. Embeddedness in a communication network may be functional for such

things as learning the quirks of certain professors (e.g., grading idiosyncrasies), keeping abreast of changes in assignments, and generally being well informed about the multitude of details involved in successfully performing and surviving in a competitive environment. We would expect centrality in a communication network to improve access to the quantity and quality of the information available to students and thereby to improve performance on both individual and team grades. To the extent that access to information reduces uncertainty and ambiguity, we would also expect a concomitant reduction in stress and an increase in satisfaction (Ganster & Schaubroeck, 1991).

> *Hypothesis 1b. Individual centrality in a communication network will be positively associated with satisfaction with an educational program and with individual and team performance.*

Adversarial Networks

It seems self-evident that adversarial relations will have important consequences in any social situation. However, possibly because of their sensitive nature, adversarial relationships have received far less empirical attention than have friendship, communication, and work flow relationships. Interestingly, despite the relative dearth of research on antagonistic relations in networks, the investigators in the Hawthorne Projects field study (Roethlisberger & Dickson, 1939; Scott, 1991) imputed considerable importance to antagonistic relationships in the social and technical functioning of work groups. Similarly, Heider, another early researcher important to social network paradigms, accorded great importance to adversarial relations, going so far as to predict broad patterns in networks based on individual-level relationships (Heider, 1979).

In an educational context, adversarial relationships may affect student outcomes in a number of ways. To the same extent that friendships carry with them intrinsic psychosocial benefits, it is also likely that adversarial relationships may be intrinsically unsatisfying, and the existence of several adversarial relationships associated with an intensive program is likely to detract from an individual's enjoyment of the program.

Widespread adversarial relations may also be instrumentally harmful, and the impact may be as simple as the "reward your friends, punish your enemies" exchange of favors process identified by Strauss (1973). The kinds of casual contacts with exchange of information or other benefits that were described for friendships are unlikely to occur between individuals who do not like one another, and a person who is embedded in an adversarial network would be potentially cut off from the natural flow of information through the grapevine. In instances in which antagonism is especially intense, omission may evolve into commission. That is, the student may become the target of purposefully harmful actions committed by others in the program.

Hypothesis 1c. Individual centrality in an adversarial network will be negatively associated with satisfaction with an educational program and with individual and team performance.

Relationships within and between Teams

In addition to individual embeddedness in the three networks described above, social relations at a team level should also be examined, especially in light of the recent emphasis on team-based structures in educational programs. Understanding how students interact within and between teams and the consequences of that interaction for their satisfaction and learning can be captured with social network techniques that explicitly model relationships between teammates and between teammates and actors external to a team. Marsden (1989) developed a formal typology of within- and between-team relationships—assessing teams' propensities to seek out relationships with other teams, to have other teams seek out relationships with them, and to have members who prefer relationships with their own team members—that is especially appropriate for this kind of study. In the sections that follow, we discuss some of the implications for the differing patterns of relations.

Formation of relationships within assigned teams. Prior investigations of social networks in organizations have demonstrated that individuals in work groups are more likely to form friendships with each other than friendships that cross work group boundaries (Krackhardt & Stern, 1988). Explanations for this observation range from simple propinquity to the development of shared worldviews as a result of working toward common goals. We expected the same phenomenon to occur in educational contexts, particularly in ongoing student teams that carry across classes. That is, we expected to find that individuals formed relationships with students within their assigned teams rather than with students outside their teams.

Hypothesis 2. Individuals will be disproportionately likely to form friendship, advice, and adversarial relationships with assigned teammates rather than nonteammates.

Friendship relations between and within teams. In a series of studies, primarily on new product development teams, Ancona documented the importance of boundary management. Boundary management is the process by which teams manage their interactions with other parts of an organization. It describes the entire set of interactions a team must undertake in dealing with others on whom it depends for information or resources, or with whom it must coordinate to complete its assignment. Ancona (1990) showed that how a team manages its boundaries can affect the team's performance.

We would contend that teams in educational contexts may also benefit from their relationships with outside groups. Although the pattern of dependencies and relationships a team may have with other groups is less clearly defined than it is for work groups, many of the same processes alluded to at the individual level would also apply to teams. For example,

teams whose members share many friendships with alternate teams may have better access to information or other resources that could be useful for team-related projects and that would benefit them with respect to team performance. Such benefits would carry over both to the team members' satisfaction with their own team processes and to satisfaction with the overall learning experience.

> *Hypothesis 3a. Friendships between members of different teams will positively affect team members' perceptions of team effectiveness, satisfaction with an educational program, and objective team performance.*

Within teams, strong personal relationships (friendships) have been shown to benefit team members through increased levels of social support (Webb, 1982). Members of teams with high levels of social support have been found to display higher levels of self-efficacy and better coping mechanisms than members of teams without such support (Campion, Medsker, & Higgs, 1993).

Further, friendships are a key antecedent of potency, a team variable that has only recently been empirically examined. Potency, a collective belief that a group can be effective, is similar to "team spirit." Hackman and Oldham (1975) argued that groups with high potency will be more committed, and potency was one of the most predictive variables of several team effectiveness indexes in a comprehensive study by Campion and colleagues (1993). Students enjoy greater levels of support in teams characterized by high degrees of friendship and should consequently report higher levels of satisfaction with their experience.

> *Hypothesis 3b. Friendships within teams will positively affect team members' perceptions of team effectiveness, satisfaction with an educational program, and objective team performance.*

Recall that Ancona (1990) found that teams performing well (high-performing teams) generally carried out more external information-gathering activities than teams performing poorly (low-performing teams). More specifically, members of high-performing teams did not simply react to communications from others (as would be the case in friendship networks), but were also more likely to initiate communication with outsiders than were individuals on low-performing teams. In short, Ancona (1990) showed that the management of external relations was crucial to work group success. As in the case of friendship relations, we expected that team members who successfully managed their external relations in pursuit of team goals would be more satisfied with their own teams' effectiveness, with team-based learning, and with the overall program.

> *Hypothesis 4a. Between-team communication will positively affect team members' perceptions of team effective-*

ness, satisfaction with an educational program, and objective team performance.

Communication within teams may be linked to attitudinal and performance outcomes through a variety of interesting mechanisms. Most centrally, teams of students in M.B.A. programs are primarily engaged in manipulating information in the course of activities such as case analyses, writing projects, and group preparation for exams. Thus, it seems a straightforward expectation that team success and perceptions of team effectiveness will be contingent on effective within-team communication—the open and frequent sharing of program and task-related ideas between team members.

Moreover, to the extent that within-team communication increases individual learning, we expect that it will be positively associated with satisfaction with team-based learning and an overall program. For example, with respect to team preparation for examinations, some evidence has indicated that students' vocalizing course material to peers led to a greater degree of long-term learning than did vocalizing to an unfamiliar experimenter (Durling & Schick, 1976). In a similar vein, Bargh and Schul (1930) found that students who learned material with the intention of teaching it to other students showed better performance than students learning for themselves only. Moreover, Artzt (1979) concluded that students were more willing to ask for help from other students than from instructors. Clearly, students will not benefit from these processes without adequate within-team communication.

Hypothesis 4b. Communication within teams will positively affect team members' perceptions of team effectiveness, satisfaction with an educational program, and objective team performance.

As noted earlier, although there is ample reason to believe that adversarial relations have important implications in organizations, they have been relatively neglected. The implications for the patterns of adversarial relations within and between teams are less certain than those for other relationships. On the one hand, adversarial relations between teams may actually lead to increased team cohesiveness (Krackhardt & Stern, 1988), which may in turn lead to increased satisfaction and performance. On the other hand, a team engaged in battles with external groups is subject to the same dangers that were explicated with regard to individual adversarial relations, such as isolation and lack of access to information.

Even within teams, the outcomes of adversarial relationships may have positive outcomes for group decision making (Amason, 1996). Schweiger, Sandberg, and Ragan (1986) found, for example, that teams characterized by greater conflict more thoroughly considered and more rigorously examined the assumptions underlying different alternatives. Mitroff (1982) similarly concluded that conflict within teams produced a learning process whereby

active and intense debate was more likely to lead to the discovery and invention of entirely new alternatives.

However, conflict that becomes overtly affective can also lead to negative outcomes. Researchers have found that conflict may improve decision quality but may also reduce consensus on and acceptance of decisions. The benefits of a high-quality decision can be lost if a team lacks the commitment needed to implement the decision or the will to work together on other decisions in the future (Amason, 1996). In short, the jury is still out with respect to the effects of adversarial relations on team processes, but there were compelling reasons to empirically examine such relationships, with the direction of predictions remaining unspecified.

Hypothesis 5a. Adversarial relationships between members of different teams will be related to team members' perceptions of team effectiveness, satisfaction with an educational program, and objective team performance.

Hypothesis 5b. Adversarial relationships within teams will be related to team effectiveness, satisfaction with an educational program, and objective team performance.

METHODS

Sample

The sample consisted of 304 first-year M.B.A. students at a large midwestern university. All students were enrolled in the full-time residential M.B.A. program, which divided students into four cohorts, each further partitioned into teams consisting of three to five members. Students remained in the same team for all of their classes during a semester and were required to submit several team-based projects in addition to individual assignments and examinations. Tables 1 and 2 present descriptive statistics and correlations for all individual- and team-level variables, respectively.

Students were asked to complete a questionnaire asking for their perceptions of the work within their teams and of the social contacts they made while in the program. The students completed the questionnaire near the conclusion of their second semester in the program. Thus, each had already completed a semester with one team and was well into his or her second semester with a different team.

Nonresponses and unusable responses rendered a usable sample of 250 students, representing a response rate of 82 percent. Data for teams in which fewer than three members completed usable questionnaires were excluded from the analysis, so the final sample was 62 teams (also representing an 82 percent response rate). We conducted tests for any differences attributable to group size, observing no significant effects. Also, because much of the analysis examined relationships between individuals, a given individual's failure to respond simply resulted in a missing node in the network.

Measures

Network variables. Students were asked to identify the friendship, communication, and adversarial relationships they shared with their classmates. For each relationship type, students were provided an alphabetized list (grouped by cohort) of all their classmates and asked to identify those with whom they shared each kind of relation. More specifically, the question through which we sought to identify friendship relations asked respondents to "indicate which of the following individuals are very good friends of yours, people whom you see socially outside of school." For communication relationships, students were asked to "indicate which of the following individuals are important sources of school-related advice or whom you approach if you have a school-related problem." Finally, to measure adversarial relationships, students were asked to indicate individuals with whom they "had an adversarial or difficult relationship." On the average, students were involved in 19.3 friendship relations, 17.8 advice-seeking relations, and 0.75 adversarial relations.

The method used to calculate individual centrality required symmetrical, or nondirectional, relations (Stephenson & Zelen, 1989). The use of symmetrical ties in the individual-level centrality measures may be regarded as a limitation, insofar as it is quite possible for actual relationships to be asymmetrical (e.g., Ibarra, 1992; Krackhardt, 1990). However, although some information may be lost in the assumption of symmetry, we believe the cost is worthwhile because the Stephenson and Zelen measure otherwise ideally captures the notion of embeddedness implied in this study. The friendship matrix was made symmetrical by taking the minimum of the "sending" and "receiving" values. Thus, a relationship was recorded if both of two individuals indicated the other was a friend, a strong indication that a friendship existed. We did not hold communication relationships to such a strict criterion, on the assumption that communicating with another individual, even frequently, does not connote as strong a tie as does friendship. Accordingly, we made the communication network symmetrical by taking the maximum value of the two actors' nominations; that is, we assumed that communication existed between two individuals if at least one of them reported it. The adversarial matrix was sparser than either the friendship or communication matrix, possibly both because there were fewer actual adversarial relationships and because it is socially undesirable to report adversarial relationships. We therefore treated adversarial relations the same as communication relations and assumed an adversarial relationship existed if at least one of the actors reported it. In contrast to these individual centrality calculations, the team-level analysis (described below) required directional data.

Stephenson and Zelen centrality. We measured each student's embeddedness in each of the three networks using Stephenson and Zelen's (1989) index of centrality, which is quite similar to Freeman's (1979) closeness centrality index. Both of these indexes denote the degree to which an individual is close to all other actors in a network, either directly (e.g., a friend),

TABLE 1
Descriptive Statistics and Correlations for the Individual-Level Variables[a]

Variable[b]	Mean	s.d.	1	2	3	4	5	6	7	8	9
1. Satisfaction with TBL 1	3.78	0.88									
2. Satisfaction with TBL 2	3.61	0.95	.74**								
3. Satisfaction with TBL 3	3.71	1.01	.61**	.70**							
4. Satisfaction with TBL 4	4.03	0.90	.61**	.64**	.56**						
5. Satisfaction with TBL 5	3.93	0.91	.61**	.64**	.56**	.63**					
6. Program satisfaction 1	3.53	0.88	.27**	.24**	.21**	.25**	.23**				
7. Program satisfaction 2	3.90	0.77	.24**	.19**	.28**	.15*	.18**	.66**			
8. Program satisfaction 3	3.97	0.71	.27**	.26**	.33**	.21**	.28**	.47**	.59**		
9. Team interaction 3	3.85	0.85	.29**	.38**	.36**	.23**	.27**	.16*	.14	.04	
10. Team interaction 4	3.40	0.89	.14*	.28**	.26**	.14*	.19**	.19**	.16*	.06	.54**
11. Team interaction 5	3.48	0.86	.21**	.39**	.34**	.19**	.25**	.16*	.11	.00	.52**
12. Team interaction 6	3.83	1.05	.27**	.41**	.37**	.29**	.31**	.13*	.14*	.01	.48**
13. Team interaction 8	3.57	1.11	.20**	.33**	.31**	.19**	.26**	.17*	.21**	.09	.51**
14. Work sharing 1	3.53	1.14	.15*	.25**	.20**	.19**	.14*	.18**	.14*	.14*	.39**
15. Work sharing 2	3.39	1.10	.17**	.26**	.21**	.20**	.17**	.13*	.12*	.20**	.35**
16. Work sharing 3	3.44	1.13	.22**	.31**	.29**	.18**	.18**	.19**	.20**	.19**	.42**
17. Individual grade	−0.05	2.23	−.08	−.01	.02	.02	.06	.10	.11	.09	.04
18. Team grade	−0.04	1.70	.05	.06	.00	−.02	.07	.07	.11	.04	.13*
19. Friendship centrality	1.57	0.40	.10	.09	.30**	.16**	.21**	.00	.11	.03	.11
20. Communication centrality	5.76	1.46	.18**	.14*	.24**	.22**	.22**	.13*	.22**	.12*	.09
21. Adversarial centrality	0.11	0.05	−.20**	−.22**	−.18**	−.15*	−.12	−.13*	−.10	−.05	−.13*

[a] $N = 250$ (students).

[b] TBL = Team-based-learning. Structural equation modeling requires the use of items rather than scale scores in a correlation matrix. The numbers after variable names refer to specific scale items, a list of which is available from the first author.

* $p < .05$

** $p < .01$

TABLE 1
(continued)

Variable[b]	10	11	12	13	14	15	16	17	18	19	20
11. Team interaction 5	.69**										
12. Team interaction 6	.54**	.62**									
13. Team interaction 8	.55**	.59**	.74**								
14. Work sharing 1	.33**	.45**	.48**	.51**							
15. Work sharing 2	.28**	.35**	.35**	.38**	.68**						
16. Work sharing 3	.38**	.44**	.52**	.55**	.82**	.66**					
17. Individual grade	−.01	.00	−.03	−.03	−.04	−.01	−.02				
18. Team grade	.14*	.06	.16*	.18**	−.05	−.03	−.06	.07			
19. Friendship centrality	.19**	.17**	.23**	.17**	.01	.02	.04	−.03	.00		
20. Communication centrality	.06	.06	.13*	.18**	.06	.07	.12	.16**	−.01	.48**	
21. Adversarial centrality	−.13	−.19**	−.05	−.07	−.04	−.06	−.09	−.02	−.05	.08	.09

TABLE 2
Descriptive Statistics and Correlations for the Team-Level Variables[a]

Variable[b]	Mean	s.d.	1	2	3	4	5	6	7	8	9
1. Satisfaction with TBL 1	3.78	0.42									
2. Satisfaction with TBL 2	3.60	0.48	.76**								
3. Satisfaction with TBL 3	3.70	0.57	.60**	.70**							
4. Satisfaction with TBL 4	4.05	0.47	.66**	.74**	.54**						
5. Satisfaction with TBL 5	3.93	0.45	.60**	.62**	.54**	.59**					
6. Program satisfaction 1	3.49	0.42	.06	.21	.06	.29*	.14				
7. Program satisfaction 2	3.87	0.40	.14	.22	.29*	.20	.17	.54**			
8. Program satisfaction 3	3.93	0.38	.28*	.27*	.29*	.27*	.28*	.46**	.53**		
9. Team interaction 3	3.85	0.56	.36**	.46**	.42**	.32*	.31*	−.04	.14	−.10	
10. Team interaction 4	3.43	0.55	.10	.34**	.28*	.23	.30*	.20	.38**	.08	.60**
11. Team interaction 5	3.47	0.56	.20	.40**	.32*	.15	.33**	.11	.27*	.06	.56**
12. Team interaction 6	3.84	0.70	.30*	.50**	.40**	.34**	.42**	.17	.32*	.00	.62**
13. Team interaction 8	3.55	0.80	.22	.40**	.39**	.23	.27*	.05	.27*	.01	.63**
14. Work sharing 1	3.50	0.81	.18	.39**	.29*	.35**	.21	.09	.17	.09	.41**
15. Work sharing 2	3.35	0.71	.26*	.51**	.31*	.32*	.30*	.21	.16	.15	.40**
16. Work sharing 3	3.40	0.75	.15	.39**	.30*	.33**	.23	.11	.21	.13	.47**
17. Friendship network α	0.00	0.50	.15	.24	.26*	.25*	.07	.11	.24	.05	.00
18. Friendship network β	0.00	0.29	.07	−.02	.22	.03	.14	.18	.26*	.00	.08
19. Friendship network γ	3.20	1.19	.15	.30*	.16	.25*	.35**	.27*	.17	.19	.32*
20. Communication network α	0.00	0.51	−.10	−.15	−.07	−.11	−.17	−.11	−.08	−.24	−.21
21. Communication network β	0.00	0.34	−.08	−.30*	−.13	−.17	−.11	−.13	−.04	−.16	−.08
22. Communication network γ	2.42	1.45	−.10	−.20	−.35**	−.24	−.17	.07	−.11	.07	−.20
23. Adversarial network α	0.00	0.30	−.02	.08	.29*	.16	.22	.17	.29*	.13	.11
24. Adversarial network β	0.00	0.29	−.03	−.07	.25*	−.03	.02	−.01	.12	−.13	−.06
25. Adversarial network γ	0.60	0.97	.21	.22	.23	.34**	.13	.16	.21	.15	.23
26. Team grade	−0.12	1.70	.11	.10	.01	−.04	.12	.04	.15	−.02	.32*

[a] $N = 62$ (teams).

[b] TBL = Team-based-learning. Numbers after variable names refer to scale items.

* $p < .05$

** $p < .01$

TABLE 2
(continued)

10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
.68**															
.66**	.77**														
.58**	.70**	.85**													
.31*	.45**	.57**	.55**												
.38**	.40**	.55**	.49**	.81**											
.42**	.45**	.62**	.64**	.91**	.81**										
.06	.14	.20	.07	.10	−.02	.05									
.14	.10	.25*	.22	−.07	.07	.02	.23								
.37**	.43**	.52**	.52**	.47**	.40**	.53**	−.01	−.10							
−.28*	−.07	−.13	−.20	−.04	−.12	−.14	.26*	−.15	−.34**						
−.07	−.06	−.14	−.15	−.16	−.33**	−.25*	.07	.09	−.35**	.45**					
−.24	−.33**	−.47**	−.41**	−.20	−.16	−.25*	−.16	−.25*	−.27*	−.16	.06				
.36**	.30*	.29*	.19	.04	.01	.13	.58**	.26*	.08	.17	.05	−.30*			
.06	.11	.18	.16	−.12	−.06	−.04	.33**	.69**	−.32*	.25	.15	−.23	.47**		
.18	.15	.26*	.33**	.19	.01	.26*	.21	.03	.46**	−.04	.00	−.05	.07	−.06	
.29*	.16	.28*	.29*	−.04	.02	−.01	−.11	.26*	.09	−.28*	−.08	.09	−.15	.02	.03

or indirectly (a friend-of-a-friend, a friend-of-a-friend-of-a-friend, etc.). An individual who is maximally close is directly related to all other network members. Mediated relationships are accorded increasingly less weight than direct relationships with each intervening node.

Stephenson and Zelen's index is more comprehensive than Freeman's because it takes into account not only the shortest path between individuals but also all possible indirect paths (see Stephenson and Zelen [1989] and Wasserman and Faust [1994: 194] for a comprehensive discussion of the logic underlying this index). All possible paths between two actors, not just the shortest path, are used in determining how close they are. Thus, a person who is both a friend of another individual and a friend-of-a-friend is judged to be somewhat closer to that individual than a person who is only a friend.

Marsden's "log-linear" model of role structures. As hypothesized above, a team's patterns of relationships, both internal and external, may affect performance and members' perceptions and attitudes. Marsden (1989) developed an algorithm based on log-linear analysis that is especially appropriate for addressing this kind of research question.[1] Using three constructs, here labeled (1) in-group preference, (2) popularity, and (3) expansiveness, this method assesses the degree to which a team's members express differing preferences in their personal relationships for their own team members (in-group preference, γ), the degree to which a team's members are selected by other individuals outside of the team (popularity, or β), and the degree to which the team's members choose members of other teams in their relationships (expansiveness, or α). Each of these dimensions is measured as a parameter in a log-linear model based on the patterns of relationships that exist within and between teams.

Although computationally onerous for large networks, Marsden's routine has several advantages over simpler methods of modeling relationships involving teams. First, it provides a test statistic of overall goodness of fit, G^2 (distributed as chi-square), which indicates the degree to which the observed pattern of relationships can be expressed as a function of α, β, and γ. A poor overall model fit with all parameters entered into the equation indicates random choices or choices made completely irrespective of the teams' expansiveness, popularity, and in-group preference. Because log-linear algorithms are hierarchical, it was also possible to test the explanatory power of each parameter using a series of nested equations and chi-square-difference tests. Thus, it was possible to test whether teams differed in their propensity to establish or attract relationships with other teams and if individuals within teams expressed a preference for establishing relationship with their own team members. We tested Hypothesis 2, which predicts a preference for in-group relations, by conducting a chi-square-difference test between mod-

[1] The program was validated by comparing results produced by it from data provided by Marsden (1989) with his reported results.

els that included only the α and β parameters and a model that also included γ. A second advantage is that the algorithm provides an index with a meaningful scale for each dimension that implicitly controls for the sizes of each of the teams.

Performance outcomes. We determined individual performance by summing the individual portions (individual assignments and exams) of overall grades converted to *Z*-scores from three core classes—finance, operations, and management of information systems. Team performance was similarly calculated using only team-based grades from the finance, marketing, and management-of-information-systems classes. Note that the scores used for the team outcome measures were from exercises (e.g., case studies) that were assigned by the marketing and operations teachers together. We examined the scores for the individual learning outcomes for variance across other courses and found no significant differences.

Perceptual and attitudinal outcomes. Multi-item scales were used to measure four of the constructs in the hypotheses: effectiveness of team interactions (team effectiveness), shared workload, satisfaction with team-based learning (TBL satisfaction), and satisfaction with the educational program (program satisfaction). Five-point Likert-type scales were used for each of the items. Items for two of the constructs (team interactions and shared workload) were adapted from an earlier empirical study by Campion and colleagues (1993). Items for the program satisfaction and team-based-learning satisfaction constructs were created for this project. Indicators of the proposed latent constructs were specified a priori and were constrained to load on only one construct, so that they would conform to the requirement of unidimensionality.

Control variable: Cognitive ability. The relationship between cognitive ability and performance in educational programs (grades) is well established (Ree & Earles, 1991), and the former is therefore an important control in any study that uses grades as an outcome. Students' scores on the Graduate Management Aptitude Test (GMAT) were used as an indicator of their cognitive ability. Although all paper-and-pencil measures of cognitive ability suffer from some limitations, the GMAT is among the best of such indicators. For example, it is extraordinarily standardized and conducted under tightly controlled conditions, and respondents typically have high motivation to do well. For this sample, the average score on the GMAT was 622.

Structural Equation Model Analysis

The structural equation models composed of both observed and latent constructs were tested for the individual and group-level models based on Hypotheses 1a, 1b, 1c, 3a, 3b, 4a, 4b, 5a, and 5b. The structural equation model included both single-indicator observed variables and multi-item latent constructs. The network indexes are, by definition, single-item observed variables, as are individual and team-based grades. Observed variables were

modeled as single-indicator constructs with zero measurement error.[2] The perceptual-attitudinal multi-indicator latent constructs were modeled on the basis of the separate indicators that resulted from the confirmatory factor analysis. For the group-level models, we estimated the indicators of latent constructs using the team-member average for each indicator.

RESULTS

Confirmatory Factor Analysis

We tested the construct validity of the measurement model for the four latent constructs using confirmatory factor analysis (CFA). The measurement model was examined iteratively; unreliable or otherwise invalid indicators were dropped and the model reestimated until an acceptable overall goodness of fit was achieved. Indicators with insignificant path values were excluded from the model, as were those that cross-loaded with other constructs, as determined by large modification indexes and patterns of residuals. In no case were indicators arbitrarily reassigned to alternative constructs.

We determined the reliability for each of the latent constructs using two indexes, Bagozzi's rho (ρ), also known as composite reliability (Bagozzi, 1980), and Fornell and Larcker's (1989) $\rho_{vc(\eta)}$. We obtained a stringent test of discriminant validity (cf. Podsakoff & MacKenzie, 1994) by comparing each $\rho_{vc(\eta)}$ value (i.e., the variance explained in the items by the construct) with the associated squared off-diagonal phi (ϕ) values (Table 3). Strong evidence for the discriminant validity of hypothesized construct is obtained if the construct's $\rho_{vc(\eta)}$ (variance extracted) exceeds all off-diagonal squared phis. Finally, we evaluated the goodness of fit for the measurement and structural equation models using chi-square, the incremental fit index (IFI), and the comparative fit index (CFI; Medsker, Williams, & Holahan, 1994). IFI and CFI values over 0.90 were judged to fit the data adequately (Tabachnick & Fidell, 1996: 749).

All of the constructs in the final model had at least three observed variable indicators, with reliabilities (ρ) ranging from .78 to .90. The measurement model fits the observed data well, with a chi-square of 165 with 98 degrees of freedom, an IFI of .95, and a CFI of .91. The matrix in Table 3 gives strong support for discriminant validity between the four constructs, as the variance-extracted estimates exceed all of the squared interconstruct correlations (cf. Podsakoff & MacKenzie, 1994).

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[2] In a few structural equation models, in order to render the theta-delta and/or theta-epsilon matrixes positive-definite—a prerequisite for the successful estimation of the models—we fixed the error variance for one or more of the single indicators to a very small nonzero value (ranging from .01 to .02) and set the path value to a corresponding value approaching one (1 – fixed error variance squared). None of the resulting models were substantively affected by these manual constraints.

TABLE 3
Results of Tests of Discriminant Validity[a]

Variable	Team-Based-Learning Satisfaction	Program Satisfaction	Team Interaction	Work Sharing
Team-based-learning satisfaction	0.65			
Program satisfaction	0.06	0.55		
Team interaction	0.23	0.02	0.59	
Work sharing	0.10	0.02	0.49	0.76

[a] Values on the diagonal are variance-extracted estimates ($\rho_{vc(\eta)}$) based on indicators; off-diagonals are squared interconstruct correlations.

Individual-Level Structural Equation Model

Hypothesis 1 proposes that individual embeddedness in the three networks of relationships included in this study will predict individual attitudes and performance. We examined the hypothesis using a structural equation model incorporating the centrality measures from each of the networks with the two satisfaction variables and grades for individual and team assignments. The complete model with all hypothesized variables had a chi-square of 126 with 57 degrees of freedom, an IFI of .95, and a CFI of .94. Because of the generally good overall fit, no respecifications were necessary for this model.

As shown in Table 4, Hypothesis 1 was partially corroborated. None of the individual centrality indexes were significantly related to team grades, nor was cognitive ability. Centrality in the communication network was positively related to individual grades, satisfaction with the overall program, and satisfaction with team-based learning. Friendship centrality was positively associated, and centrality in the adversarial network negatively associated, with the two satisfaction constructs. Finally, cognitive ability was positively associated with individual performance and negatively associated with overall satisfaction with the program.

Team-Level Models

Parameter estimates for each of the three relationship types were generated with the log-linear routine described by Marsden (1989). The friendship model without the in-group preference parameter γ did not fit particularly well (χ^2 = 3,988, df = 3,721, p = 0.001), but the model with the γ parameter replicated the observed variables very well (χ^2 = 3,206, df = 3,659, p = 1.00). The communications models without and with γ both fit very well, but the addition of γ resulted in a statistically significant improvement in fit (χ^2 = 290, df = 62, p = 0.00). The adversarial model without γ fit the observed frequencies very well (χ^2 = 364, df = 3,721), but the addition of γ failed to significantly improve the model.

Team-level structural equation models. As described previously, the parameter estimates from the log-linear models were used in structural equa-

TABLE 4
Relationships between Network Variables and Learning Outcomes: Individual-Level Model[a]

Dependent Variable	Loading	*t*	*p*	Error Variance	R^2
Team-based-learning satisfaction				0.85	0.15
Individual grade	−0.09	−1.26			
Team grade	0.00	−0.04			
Friendship centrality	0.16	2.20	0.03		
Communication centrality	0.20	2.74	0.00		
Adversarial centrality	−0.27	−4.18	0.00		
Cognitive ability	−0.02	−0.35			
Program satisfaction				0.88	0.12
Individual grade	0.11	1.61			
Team grade	0.08	1.23			
Friendship centrality	−0.07	−0.88			
Communication centrality	0.26	3.42	0.00		
Adversarial centrality	−0.16	−2.52	0.01		
Cognitive ability	−0.17	−2.42	0.01		
Individual grade				0.84	0.16
Friendship centrality	−0.09	−1.28			
Communication centrality	0.21	3.10	0.00		
Adversarial centrality	−0.02	−0.38			
Cognitive ability	0.34	5.81	0.00		
Team grade				1.00	0.00
Friendship centrality	−0.04	−0.53			
Communication centrality	0.00	0.06			
Adversarial centrality	−0.03	−0.45			
Cognitive ability	−0.04	−0.64			

[a] Chi-square with 57 df = 126 (p = .00); IFI = .95, CFI = .94.

tion models as antecedents to team members' perceptions of team effectiveness, team grades, and satisfaction with the program. Because the sample was smaller for the team-based models (62 teams), we estimated three separate structural equation models, one each for the three relationship types. As before, model estimation was iterative; constructs with small R^2 values and involved in few, if any, significant paths were dropped, and models were reestimated until an acceptable goodness of fit was achieved.

Table 5 shows the results from the friendship model. We dropped the constructs popularity (β), perceptions of shared workload, and satisfaction with team-based learning from successive models until an acceptable fit was obtained (χ^2 = 43, df = 37, p = 0.22). In the final model, the relationship between the expansiveness of a team's members (i.e., the degree to which they reported that they were friends with students outside the team) and satisfaction with the program approached significance (p = 0.053), but no other variables in the friendship model were related to program satisfaction. As predicted, friendship expansiveness and in-group preference (analogous to group cohesion) were positively related to perceptions of team effective-

TABLE 5
Relationships between Friendship Networks and Team-Level Outcomes[a, b]

Dependent Variable	Loading	*t*	*p*	Error Variance	R^2
Program satisfaction				0.80	0.20
Team interaction	0.15	0.95			
Team grade	0.13	0.91			
Expansiveness	0.29	1.96	0.05		
In-group preference	0.16	1.13			
Team interaction				0.84	0.16
Expansiveness	0.28	2.22	0.02		
In-group preference	0.27	2.13	0.03		
Team grade				0.83	0.17
Team interaction	0.41	3.00	0.00		
Expansiveness	−0.27	−2.20	0.03		
In-group preference	−0.05	−0.43			

[a] Chi-square with 37 $df = 43$ ($p = .22$); IFI = .98, CFI = .98.
[b] Constructs that were not involved in any significant relationships were dropped from the final model.

ness, which was in turn positively associated with the team grade. Interestingly, friendship expansiveness was negatively related to the team grade, so the direction of relationship was opposite to prediction.

Table 6 shows results from the final communication model. We dropped the α and β constructs from the final model. Average perceptions of team effectiveness were positively associated with satisfaction with team-based learning, but none of the other proposed antecedents were significant. Within-team communication (γ) was strongly correlated with perceptions of shared workload and team effectiveness. Perceptions of team effectiveness were positively associated with the teams' grades but, interestingly, shared workload was negatively related. Within-team communication was not significantly related to team grades.

Table 7 shows the adversarial model results. As in the communication model, the α and β parameters were not involved in any significant relationships and were dropped from the model. The number of adverse relationships reported within teams, however, is related to several outcomes.[3] As expected, a relatively high number of adversarial relations within teams corresponded inversely with perceptions of team effectiveness and shared workload. Team effectiveness was positively related, and shared workload

[3] It is important to note that even though the γ parameter failed to improve the overall fit of the adversarial model in the Marsden algorithm, it was still a valid indicator of the relative number of adversarial relationships within teams. That is, teams with greater than average numbers of adversarial relations will have larger γ parameters. The chi-square-difference results simply indicate that, on the average, in this population team members were not differentially engaged in adversarial relationships within and outside of their teams.

TABLE 6
Relationships between Communication Networks and Team-Level Outcomes[a, b]

Dependent Variable	Loading	*t*	*p*	Error Variance	R^2
Team-based-learning satisfaction				0.76	0.24
Work sharing	0.11	0.75			
Team interaction	0.48	2.64	0.01		
Team grade	−0.05	−0.38			
In-group preference	−0.03	−0.20			
Program satisfaction				0.90	0.10
Work sharing	0.00	0.01			
Team interaction	0.22	1.07			
Team grade	0.04	0.27			
In-group preference	0.12	0.65			
Work sharing				0.73	0.27
In-group preference	0.52	4.19	0.00		
Team interaction				0.70	0.30
In-group preference	0.55	4.43	0.00		
Team grade				0.82	0.27
Work sharing	−0.34	−2.39	0.01		
Team interaction	0.55	3.61	0.00		
In-group preference	−0.03	−0.21			

[a] Chi-square with 124 df = 195 (p = .00); IFI = .91, CFI = .90.

[b] Constructs that were not involved in any significant relationships were dropped from the final model.

negatively related, with team grade. Perhaps most significantly, greater levels of intrateam conflict were positively related to team performance.

DISCUSSION

What stands out most in the results of the present study is that social networks clearly mattered to important educational outcomes, including student satisfaction, team project performance, and individual grades. These findings confirm widely held anecdotal beliefs that student relationships should be considered, along with instructional design and individual aptitude, as predictors of individuals' and teams' success in an M.B.A. program. Both individual centrality and within- and between-team relationships were linked to program outcomes in a variety of important ways.

Individual-Level Findings

More specifically, individual centrality in the communication and friendship networks was positively associated with perceptions of learning and enjoyment of the program. In addition, communication centrality was positively linked to individual grades. Taken together, these findings suggest that network centrality enabled students to avail themselves of resources and support to a greater degree than their less central colleagues could. Not

TABLE 7
Relationships between Adversarial Networks and Team-Level Outcomes[a, b]

Dependent Variable	Loading	*t*	*p*	Error Variance	R^2
Team-based-learning satisfaction				0.77	0.23
Work sharing	0.12	0.86			
Team interaction	0.45	2.39	0.01		
Team grade	−0.04	−0.27			
In-group preference	−0.03	−0.18			
Work sharing				0.94	0.06
In-group preference	−0.25	−1.93	0.05		
Team interaction				0.79	0.21
In-group preference	−0.46	−3.68	0.00		
Team grade				0.73	0.42
Work sharing	−0.36	−3.00	0.00		
Team interaction	0.70	4.90	0.00		
In-group preference	0.34	2.60	0.01		

[a] Chi-square with 83 $df = 140$ ($p = .00$); IFI = .92, CFI = .91.
[b] Constructs that were not involved in any significant relationships were dropped from the final model.

surprisingly, centrality in the adversarial network was negatively associated with satisfaction with teams and the program overall, suggesting that the presence of adversaries is discomforting and lessens student enjoyment of the program experience.

Two findings regarding cognitive ability also stand out. First, as expected, cognitive ability was strongly related to individual grades, but it was clearly not the sole predictor of performance. That is, although cognitive ability remains a critical factor in predicting student success, centrality in social networks also plays a significant role.

Second, cognitive ability was negatively related to satisfaction with the program. That is, those scoring highest on the GMAT were significantly less satisfied with the program than those scoring lower. We suspect that this finding will be disappointing, though perhaps not surprising, to advocates of cooperative learning structures. It seems likely that the most talented students may feel burdened with responsibility for helping others and not feel they are maximizing their own learning or development. Indeed, over the years we have heard a number of M.B.A. students who were performing well lament that they often had to carry less capable students. Conversely, the students performing at the lowest level enjoy a more naturally occurring level of support in a team-based structure and may consequently report higher levels of satisfaction with their experience.

Team-Level Findings

With respect to the relationships within and between teams, a number of findings warrant highlighting. First, friendship and communication rela-

tionships are formed predominately within formally assigned teams. Although this is perhaps not a particularly surprising finding, it is nonetheless worth noting in light of the increased emphasis on formal teams. Indeed, M.B.A. program faculty members may be strongly influencing the nature and shape of highly consequential informal networks when they make team assignments. Further, it may be that ongoing permanent team assignments actually hinder the widespread development of broader-reaching informal networks in educational programs.

A second general finding of the present study was that levels of communication within teams were directly and strongly associated with perceptions of team effectiveness and workload sharing. This finding is not particularly surprising in that the work and context of these teams were essentially about communicating. We would therefore expect groups that create a high level of communication to be more likely to achieve positive outcomes. Also straightforward was the finding that increased interaction in turn led to higher team grades.

The one unexpected finding about within-team relationships was that workload sharing was negatively associated with team grades. Here again, we suspect that M.B.A. team designers may find this result disappointing but not inexplicable. The negative association of workload sharing with team grades suggests that in a significant number of teams, a few stars carried disproportionate shares of the teams' workloads. This finding would also help account for the lower satisfaction reported by students with high cognitive ability. It may also confirm the fear of M.B.A. instructors that, say, a bright student skilled in finance might end up doing most of the financial analysis for team assignments at the expense of the learning of others.

A third finding relative to team relationships was that although within-team relationships generally related to outcomes, between-team relationships generally did not. The one exception was friendship expansiveness—but it was negatively related to team grades, not positively related, as predicted. In other words, teams whose members reported higher-than-average numbers of friends outside of the group were less successful than those that were less expansive. We hypothesized universally positive outcomes for friendship centrality, but in retrospect it seems quite plausible that an excess of off-task or non-course-related socializing could have had detrimental effects on achievement. Many instructors would probably concur that their most social students are not necessarily their best students, and thus we are inclined now to believe that friendship embeddedness may have both positive and negative outcomes.

The general lack of relationships involving interteam associations diverges from the findings of Ancona and colleagues (e.g., Ancona & Caldwell, 1990), who documented the value of boundary-spanning and between-group activity in a series of studies. We suspect that this finding can be explained by the fact that M.B.A. teams have less substantive interdependence than the highly dependent, cross-functional, new product teams that were the primary focus of Ancona and Caldwell's (1990) work. Put simply, for M.B.A.

students there may be relatively little utility in connecting with other teams. And, in the case of friendship expansiveness, too much outside contact (consorting with the competition) may actually detract from a team's focus and from within-team performance.

Perhaps the most provocative findings of the present study are those regarding adversarial relationships within teams. As expected, and consistent with the findings for the individual centrality analysis, adversarial relations were negatively related to team satisfaction, team interaction, and workload sharing. However, greater levels of intrateam conflict were positively associated with team performance. Put another way, students did not like the presence of adversarial relationships, but such relationships were instrumental for higher team performance.

Although the results regarding adversarial relationships may seem counterintuitive for those close to M.B.A. instruction, they are consonant with some recent work suggesting that conflict may actually enhance decision quality (e.g., Amason, 1996). The results seem to generally support the notion that some team conflict can help groups challenge assumptions and create higher-quality projects and reports, though such achievement comes at the cost of some positive affect. Our data preclude us from reaching substantive conclusions, but this is clearly an intriguing and important issue for further investigation.

Amason (1996) noted that the central challenge for top management teams in organizations is gaining the benefits of conflict without the costs. His research also showed that some of the top management teams he studied were better than others at managing conflict—and those teams were also more successful. The same issues are germane to understanding team effectiveness in academic environments. Perhaps teams can be helped to manage conflict without sacrificing positive affective outcomes.

Implications

The present results have a number of practical implications for more effective teaching in the organizational sciences. First, though college educators have traditionally viewed the interaction between instructor and student as the sole source of subject matter mastery and student satisfaction (Johnson & Johnson, 1993), these findings clearly suggest that peer interaction can be influential as well. Although an assumption common to many teaching guidebooks is that educators should manage the learning context in a way that will facilitate learning and transfer, the reality is that so little has been known about the student context and what factors might be most influential to important outcomes that any recommendations made to date really constitute wishful thinking more than empirically supported prescriptions. Although these findings are only a first step, they do provide a model for understanding and describing emerging social networks that can have functional and dysfunctional effects for students.

Second, we contend that these results provide support for the view that networks and network relationships should be among the topics of primary

importance in courses devoted to organizational science. Indeed, student networks provide a marvelous learning laboratory in which to explore those concepts. In this vein, a long-term study conducted at Bell Labs (Kelly & Caplan, 1993) presented some intriguing data suggesting that the most critical distinction between the stars and the average performers at Bell Labs was the former's skilled use of networks. The potential opportunities for experiential learning about networks (using as a foil the very networks of which students are parts) are immense, though there has to date been so little specification of how researchers might measure the complexity of student networks that there has been no usable infrastructure for capitalizing on these opportunities.

Limitations

Several limitations of the study constrain generalizability and warrant some caution in the interpretation of results. First, the sample consisted of students in a full-time residential M.B.A. program, an educational structure that is in decline relative to such other structures as part-time evening programs and distance education (instruction via television, videoconferencing, or written correspondence). Thus, generalization to different program formats is probably ill advised. Second, the study was correlational and relied on one-time self-report measures to represent several constructs. We proposed causal directions in our hypotheses and considered the underlying logic sound, but the nature of the design precludes ironclad causal inferences.

Third, social network analysis requires exhaustive data collection and stringent standards for response rates. With that in mind, the 82 percent response rate reported here, while impressive by most standards, is adequate but still less than ideal for conducting social network analysis. Although no hard-and-fast requirements for minimum sample size have been established for structural equation models (aside from the requirement that the sample size exceed the number of parameters estimated, which was met in this study), our sample of 62 teams is again less than ideal for this type of analysis. Nonetheless, the nature of team research is such that samples seldom exceed the size of the one investigated here, and concerns regarding statistical power are mitigated somewhat by the number of significant relationships we observed.

Future Research Directions

The findings of the current study suggest at least two directions for future research we believe would be fruitful. First, there is a need to assess the durability of student relationships and the evolution of networks over time. That is, a future examination might focus on the development of network relationships as students continue into the second years of M.B.A. programs and even on relationships developed after students have been in the workforce for some time. Among the accepted maxims of M.B.A. education is that the acquaintances made become a lifelong network of friends and resources,

and it would be interesting to see an empirical investigation of that phenomenon. It would also be a research direction important to those concerned with institutional loyalty, alumni's giving patterns, and so on.

A second important stream of research might center on how to design and manage learning structures in a way that promotes the most functional network development. For example, given the importance of team assignment noted earlier, it would be valuable to learn more about the best criteria to employ in making such assignments. Similarly, researchers need to know much more about how to best structure extracurricular activities, team orientation and counseling sessions, and perhaps even course work to help students maximize their understanding of the importance and effects of social networks.

Although individual student instruction was once the norm, much graduate business education now takes place in social settings containing peers and others. The present study suggests that informal networks do *matter* and that the impact of a team's pattern of interaction may be considerable. The richer the understanding of the complex web of social interactions that exist among students in graduate business programs, the better chance teachers will have of creating effective learning environments.

REFERENCES

Amason, A. C. 1996. Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. ***Academy of Management Journal,*** 39: 123–148.

Ancona, D. G. 1990. Outward bound: Strategies for team survival in an organization. ***Academy of Management Journal,*** 33: 334–365.

Ancona, D. G., & Caldwell, D. F. 1990. Improving the performance of new product teams. In R. Rosenbloom (Ed.), ***Research in technology management,*** vol. 2: 25–29. Greenwich, CT: JAI Press.

Artzt, A. 1979. Student teams in mathematics class. ***Mathematics Teacher,*** 72: 505–508.

Bagozzi, R. P. 1980. ***Causal models in marketing.*** New York: Wiley.

Bargh, J., & Schul, Y. 1980. On the cognitive benefits of teaching. ***Journal of Educational Psychology,*** 72: 593–604.

Brass, D. J. 1992. Power in organizations: A social network perspective. In G. Moore & J. A. Whitt (Eds.), ***Research in politics and society,*** vol. 4: 295–323. Greenwich, CT: JAI Press.

Burkhardt, M. E., & Brass, D. J. 1990. Changing patterns or patterns of change: The effect of a change in technology on social network structure and power. ***Administrative Science Quarterly,*** 35: 104–127.

Burt, R. S. 1987. Social contagion and innovation: Cohesion vs. structural equivalence. ***American Journal of Sociology,*** 92: 1287–1335.

Burt, R. S. 1992. ***Structural holes: The social structure of competition.*** Cambridge, MA: Harvard University Press.

Byrne, J. A. 1995. **Business Week *guide to the best business schools.*** New York: McGraw-Hill.

Campion, M. A., Medsker, G. J., & Higgs, A. C. 1993. Relations between work group characteristics and effectiveness: Implications for designing effective work groups. ***Personnel Psychology,*** 46: 823–850.

Coleman, J. S., Katz, E., & Menzel, H. 1957. The diffusion of an innovation among physicians. ***Sociometry,*** 20: 253–270.

Das, T. K. 1994. Educating tomorrow's managers: The role of critical thinking. ***International Journal of Organizational Analysis,*** 2: 333–360.

Durling, R., & Schick, C. 1976. Concept attainment by pairs and individuals as a function of vocalization. ***Journal of Educational Psychology,*** 68: 83–91.

Fornell, C., & Larcker, D. F. 1981. Evaluating structural equation models with unobservable variables and measurement error. ***Journal of Marketing Research,*** 28: 39–50.

Freeman, L. 1979. Centrality in social networks: Conceptual clarification. ***Social Networks,*** 1: 215–239.

Ganster, D. C., & Schaubroeck, J. 1991. Work stress and employee health. ***Journal of Management,*** 17: 235–272.

Granovetter, M. 1979. The theory-gap in social network analysis. In P. W. Holland & S. Leinhardt (Eds.), ***Perspectives on social network research:*** 501–517. New York: Academic Press.

Hackman, J. R., & Oldham, G. R. 1975. Development of the Job Diagnostic Survey. ***Journal of Applied Psychology,*** 60: 159–170.

Heider, F. 1979. On balance and attribution. In P. W. Holland & S. Leinhardt (Eds.), ***Perspectives on social network research:*** 11–23. New York: Academic Press.

Ibarra, H. 1992. Homophily and differential returns: Sex differences in network structure and access in an advertising firm. ***Administrative Science Quarterly,*** 37: 422–447.

Ibarra, H. 1995. Race, opportunity, and diversity of social circles in managerial networks. ***Academy of Management Journal,*** 38: 673–703.

Ibarra, H., & Andrews, S. B. 1993. Power, social influence, and sense-making: Effects of network centrality and proximity on employee perceptions. ***Administrative Science Quarterly,*** 38: 277–303.

Johnson, D. W., & Johnson, R. T. 1993. Structuring groups for cooperative learning. In C. M. Vance (Ed)., ***Mastering management education: Innovations in teaching effectiveness:*** 187–198. Newbury Park, CA: Sage.

Kelley, R., & Caplan, J. 1993. How Bell Labs creates star performers. ***Harvard Business Review,*** 71(4): 128–139.

Krackhardt, D., & Stern, R. 1988. Informal networks and organizational crises: An experimental simulation. ***Social Psychology Quarterly,*** 51: 123–140.

Marsden, P. V. 1989. Methods for the characterization of role structures in network analysis. In L. C., Freeman, D. R., White, & A. K. Romney (Eds.), ***Research methods in social network analysis:*** 489–530. Fairfax, VA: George Mason University Press.

Medsker, G. J., Williams, L. J., & Hollahan, P. J. 1994. A review of current practices for evaluating causal models in organizational behavior and human resources management research. ***Journal of Management,*** 20: 439–464.

Michaelsen, L. K., Jones, C. F., & Watson, W. E. 1993. Beyond groups and cooperation: Building high performance learning teams. In D. L. Wright & J. P. Lunde (Eds.), ***To improve the academy: Resources for faculty, instructional, & organizational development,*** vol. 12: 127–145. Stillwater, OK: New Forums Press.

Mitroff, I. I. 1982. Dialectic squared: A fundamental difference in perception on the meanings of some key concepts in social science. ***Decision Science,*** 13: 222–224.

Podsakoff, P., & MacKenzie, S. 1994. Organizational citizenship behavior and sales unit effectiveness. ***Journal of Marketing Research,*** 31: 351–363.

Ree, M. J., & Earles, J. A. 1991. Predicting training success: Not much more than g. ***Personnel Psychology,*** 44: 321–332.

Reilly, R. F. 1982. Teaching relevant management skills in M.B.A. programs. ***Journal of Business Educations,*** 57: 139–142.

Roethlisberger, F. J., & Dickson, W. J. 1939. ***Management and the worker.*** Cambridge, MA: Harvard University Press.

Rogers, E. 1979. Network analysis and the diffusion of innovations. In P. W. Holland & S. Leinhardt (Eds.), ***Perspectives on social network research:*** 137–165. New York: Academic Press.

Schweiger, D. M., Sandberg, W. R., & Ragan, J. W. 1986. Group approaches for improving strategic decision making: A comparative analysis of dialectical inquiry, devil's advocacy, and consensus approaches to strategic decision making. ***Academy of Management Journal,*** 29: 51–71.

Scott, J. 1991. ***Social network analysis: A handbook.*** Newbury Park, CA: Sage.

Stephenson, K., & Zelen, M. 1989. Rethinking centrality. ***Social Networks,*** 11: 1–37.

Strauss, G. 1973. Tactics of lateral relationship. In H. J. Leavitt & L. R. Pondy (Eds.), ***Readings in managerial psychology*** (2nd ed.): 346–379. Chicago: University of Chicago Press.

Tabachnick, B. G., & Fidell, L. S. 1996. ***Using multivariate statistics.*** New York: Harper/Collins.

Wasserman, S., & Faust, K. 1994. ***Social network analysis: Methods and applications.*** New York: Cambridge University Press.

Webb, N. M. 1982. Student interaction and learning in small groups. ***Review of Educational Research,*** 52: 421–445.

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CELEBRATING 40 YEARS OF THE *ACADEMY OF MANAGEMENT JOURNAL*

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The 1998 volume of the *Academy of Management Journal* (*AMJ*) marks the 40th anniversary of its publication. This special section was commissioned by the current editor, Anne Tsui, to commemorate the journal's anniversary. Because the early years of the journal have been described elsewhere (Adams & Davis, 1986), no attempt will be made to provide a detailed history. Instead, the goal of this special section is to provide readers with an appreciation of what the journal was like in its early years, its tremendous growth and development over the first 40 years, and some of the challenges it may face in the future. As a way to recognize the important role that contributors have played in the development of the journal, the ten most often cited articles in the journal's history are identified. Finally, the past editors of the journal who are still living have been commissioned to reflect on their terms as editor and on the state of the field of management at that time. Their contributions follow a discussion of the evolution, contributions, and evaluation of the journal.

THE EVOLUTION OF *AMJ*

Celebrating the 40th anniversary of *AMJ* in 1998 is only possible if one isn't too compulsive about dates. The ambiguity about the true anniversary of the journal has its origin in a historical quirk. After an extensive discussion among Academy members about publishing a journal, beginning in 1955, the first experimental issue of *The Journal of the Academy of Management* was distributed in 1957 as an addendum to the *Proceedings of the 1956 Annual Meeting* (the journal did not become the *Academy of Management Journal* until 1963). The first published issue (volume 1, number 1) of the journal found in most libraries, however, is dated April 1958. The first published issue contained the very same seven articles as the experimental issue plus one new article by Harold Koontz (Adams & Davis, 1986). Perhaps this suggests that the half-life of management ideas was longer then than it is today.

I would like to thank Josh Yanov for his assistance in collecting and compiling the Social Science Citation Index data.

The journal began with an editor, Paul M. Dauten, Jr., and an associate editor, Dalton E. McFarland. From the very first experimental issue, submissions were blind-reviewed, initially, one assumes, by members of the Academy's Research and Publications Committee (this is unclear; the initial editorial statement mentioned a Board of Review but did not list its members). The subscription price for three issues was $3 ($3.50 foreign), and submissions were limited in length to 1,500 to 3,000 words.

The evolution of *AMJ,* like that of the larger Academy of Management, has been truly remarkable. Over the course of 40 years, the journal has published approximately 1,834 articles in 30,161 pages. In the year in which the journal was first proposed, the Academy of Management had 157 members. It is now a scholarly association of almost 10,000 members worldwide organized into 22 divisions and interest groups and five regional associations. The Academy of Management allocated $500 to support publication of the first experimental issue of *AMJ.* In 1998, the budget for the journal will approach $350,000.

Although the journal's current editorial domain is limited to empirical research, *AMJ* began life as the only printed means through which Academy members could communicate with each other (other than the annual meetings' proceedings, which were printed sporadically, when a school could be found to pick up the cost). Thus, early volumes of the journal, in addition to scholarly articles, contained many features not found today, including, at various times, regular essays ("Management in Perspective"); "News and Notes," which had news about Academy members; rejoinders; lists of recently completed dissertations and books being written by members; and book reviews. The journal was also a source of practical advice for managers, as this early contribution from "News and Notes" suggests:

> The Industrial Relations News has recently issued a sharp warning regarding the giving of medals and awards to female employees for long service. Their study of this widespread practice concluded that: (1) making a fuss over their long stay in the company reminds the girls of their age; and (2) the more diamond and gold pins, scrolls, watches, and so on a worker sports, the farther over the hill she is (News and Notes, 1960: 69).

Today, many Academy members lament the fact that practicing managers don't pay attention to what is written in the journal. Back in 1960, one could only hope that they didn't.

Like the editorial domain of the journal, its governance structure has also undergone many changes. Initially there were an editor and an associate editor; a 9-person Board of Editorial Consultants was added in April 1959, and the editor became "editor-in-chief," although only briefly. An editorial review board first appeared in August 1960. It was composed of 8 people—compare that with the 58 Editorial Board members listed in the December 1996 issue. The role played by the editorial consultants vis-à-vis the reviewers is not entirely clear, although John Miner's reflection on his term as editor suggests the former group may have been more honorary. Looking at

the editorial governance structure of the journal in the early years reveals that it was largely male-dominated. The first female member of the Editorial Board did not appear for almost 20 years (Karlene Roberts, appointed by L. L. Cummings in 1976), and the first woman was not appointed editor of the journal until 1985 (Janice Beyer). A review of the early years also reveals a high degree of stability in the composition of both the editorial consultants and Review Board.

The honor of publishing the lead article in the very first issue of *AMJ* goes to William B. Wolf, then of the University of Washington. His article, "Organizational Constructs: An Approach to Understanding Organizations," described a conceptual framework for understanding organizations that, in the author's words, "may, upon further study and research, supply a general theory of organization." Some 40 years later, a general theory of organization remains elusive. However, few can doubt that the field of management is further along the learning curve as a consequence of the scholarly work published in *AMJ*.

As detailed in Table 1, the journal has grown and prospered under each of its former editors. From the inaugural volume's three issues, 69 articles, and 610 pages, the journal had grown in 1996 to six annual issues, 207 published articles and research notes, and 5,259 pages. The history of the journal, with several notable exceptions, is one of steady growth. The exceptions include John Miner's term as editor—when both the number of articles published and the number of pages increased rather dramatically (see Miner's reflection, below, for an explanation). In contrast, the numbers of articles published by Janice Beyer, Michael Hitt, and me were lower than the number published during Thomas Mahoney's term. Interestingly, the total number of journal pages and the average length of each article also

TABLE 1
Evolution of the *Academy of Management Journal*

Volumes	Years	Editor	Issues	Pages	Articles	Average Article Length[a]
1–3	1958–60	Dauten	3	610	69	8.84
4–6	1961–63	McFarland	3–4	843	69	12.22
7–9	1964–66	Gordon	4	1,079	81	13.32
10–12	1967–69	Vance	4	1,439	102	15.98
13–15	1970–72	Scott	4	1,598	100	15.98
16–18	1973–75	Miner	4	2,476	226	10.96
19–21	1976–78	Cummings	4	2,188	176	12.43
22–24	1979–81	Slocum	4	2,599	175	14.62
25–27	1982–84	Mahoney	4	2,668	182	14.66
28–30	1985–87	Beyer	4	2,748	162	16.96
31–33	1988–90	Mowday	4	2,840	127	22.36
34–36	1991–93	Hitt	4–6	3,860	158	24.43
37–39	1994–96	DeNisi	6	5,259	207	25.41

[a] Number of pages.

increased during this period. Although fewer articles were published, authors were given more pages in which to describe their theory, methods, and findings.

In Table 2, an analysis of the content of the articles and research notes published in *AMJ* over three and a half decades is presented. This is an extension of data originally published by Adams and Davis (1986), who analyzed articles published during the years 1958–59 and 1968–69. Their analysis was extended to include the years 1978–79, 1988–89, and 1993–94. This table must be interpreted with *caution,* however. The classifications for the first two time periods and for the subsequent extension were done by different individuals. Moreover, classifying articles into content areas is inherently subjective. Just as beauty may lie in the eyes of the beholder, the perceived focus of a research article may depend heavily on the person doing the classification. The task is made more difficult by the fact that articles may span more than one topic area reflected in the Academy's divisions and interest groups (this is especially apparent in more recent years, suggesting that articles are becoming more interdisciplinary). When this occurred, I tried to examine the primary area from which the theory underlying the predictions was drawn, the dependent or outcome variables being predicted, and what the authors said with respect to their intended contribution (it is not known how Adams and Davis conducted their classification). Thus, the data in Table 2 should be interpreted as depicting rough trends with a non-negligible but unknown margin of error, not as a precise analysis. Although this line may have appeared in the journal once or twice before, I must say that this may be an area in which further research is needed.

Perhaps the most notable trend revealed by this content analysis is the extent to which articles focusing on management education and development and organization and management theory dominated early volumes of the journal. By the latter three periods, however, articles focusing on management education issues had largely disappeared. Although this shift clearly reflects the increasing focus of the journal on empirical research, it is interesting to note that there are current discussions within the Academy about the desirability of publishing a journal focusing on topics related to teaching. In the intervening years, the number of articles focusing on organizational behavior topics increased dramatically and then seemed to decline. In more recent years, there has been a clear and dramatic increase in the number of articles focusing on business policy and strategy. Moreover, there is increasing evidence that articles focusing on areas that previously received little attention are now beginning to appear in the journal. This is especially true of research methods in the last time period, although this number is inflated by the publication of a special research forum on this topic in 1993.

Although the journal began its history dominated by a more inward professional focus on management education, the emphasis in recent years has shifted to the more practical question of how business organizations compete. This shift appears to mirror changes in the competitive environment of business and may account for the fact that articles published in *AMJ*

TABLE 2
Content Analysis of Articles Published in *AMJ* over Time[a]

Content Area	1958–59	1968–69	1978–79	1988–89	1993–94
Management history	2%	0%	0%	0%	0%
Management education and development	41	13	0	1	0
Organizational behavior	7	33	47	28	18
Business policy and strategy	7	2	3	24	21
Managerial consultation	2	0	0	0	0
Operations management	4	0	1	1	0
Organization and management theory	29	24	9	14	11
Human resources	0	6	9	15	10
Social issues in management	2	3	3	5	3
International management	2	2	3	0	4
Organization development and change	0	3	0	0	2
Organizational communication and information systems	2	3	4	2	1
Health care administration	0	0	0	0	1
Public and nonprofit sector	0	3	0	0	0
Careers	0	0	0	0	4
Women in management	0	0	3	1	4
Technology and innovation management	4	0	3	3	2
Entrepreneurship	0	2	0	0	0
Research methods	0	6	15	1	12
Conflict management	NA	NA	0	1	2
Managerial and organizational cognition	NA	NA	0	3	5
Organizations and the natural environment	NA	NA	0	0	0

[a] "NA" indicates classification not included in Adams and Davis (1986). In 1993, two special research forums were published, one on configurational approaches to organizations and the other on research methods. Percentages represent the number of articles categorized into the given content area in the two years indicated.

are increasingly cited by the popular business press (see Michael Hitt's and my reflections, below).

THE TEN MOST OFTEN CITED ARTICLES IN *AMJ*'S HISTORY

In preparation of this special anniversary section, the Institute for Scientific Information, publisher of the *Social Science Citation Index,* was contracted to identify the ten most often cited articles published in *AMJ*'s first 40 years. This analysis was based on raw citation counts and was not corrected for years since the publication of an article. Clearly, this method favors articles published earlier, because they have been around longer to collect citations. Table 3 lists the ten articles *alphabetically* by the last name of the lead author.

The most commonly cited articles range in publication date from 1975 to 1986, with slightly more falling within the decade of the 1980s. Several of these articles focus on theory or offer reviews of specialized areas of the literature, suggesting they would have fit more clearly within the editorial domain of the *Academy of Management Review* had it been published at the time (the first volume of *AMR* did not appear until 1976). Only one individual (Danny Miller) is a co-author on more than one of the most cited articles. Interestingly, only three of the ten appeared as the lead articles of the issues in which they were published. Since it is widely assumed that journal editors select their very best papers to appear as leads, this suggests that

TABLE 3
The Ten Most Often Cited Articles Published in *AMJ*, 1958–95[a]

Dess, G. G., & Davis, P. S. 1984. Porter's (1980) generic strategies as determinants of strategic group membership and organizational performance. 27: 467–488.

Gupta, A. K., & Govindarajan, V. 1984. Business unit strategy, managerial characteristics, and business unit effectiveness at strategy implementation. 27: 25–41.

Hambrick, D. C. 1983. Some tests of the effectiveness and functional attributes of Miles and Snow's strategic types. 26: 5–26.

Hofer, C. W. 1975. Toward a contingency theory of business strategy. 18: 784–810.

Latham, G. P., & Yukl, G. A. 1975. A review of research on the application of goal setting. 18: 824–845.

Miller, D., & Friesen, P. H. 1980. Momentum and revolution in organizational adaptation. 23: 591–614.

Miller, D., Kets de Vries, M. F. R., & Toulouse, J. M. 1982. Top executive locus of control and its relationship to strategy-making, structure, and environment. 25: 237–253.

Miller, K. I., & Monge, P. R. 1986. Participation, satisfaction, and productivity: A meta-analytic review. 29: 727–753.

Sims, H. P., Jr., Szilagyi, A. D., & Keller, R. T. 1976. The measurement of job characteristics. 19: 195–212.

Stevens, J. M., Beyer, J. M., & Trice, H. M. 1978. Assessing personal, role, and organizational predictors of managerial commitment. 21: 380–396.

[a] Articles are listed alphabetically by the last name of the lead author. Data were compiled by the Institute for Scientific Information.

forecasting the future impact of an article is an imperfect science, even when practiced by presumed experts.

EVALUATING *AMJ* IN HISTORICAL CONTEXT

As described by Adams and Davis (1986: 90), the original objectives stated by the Research and Publications Committee for the Academy's first journal were modest in scope:

> The articles published should be primarily those which deal with the teaching of management subjects, curriculum building and scholarly discussions of interest to students of management. Later on it may be well to devote some space to learned and scholarly articles of a theoretical or research nature. . . . The major objective of the Journal at the beginning should be to serve as a means of communication on teaching problems in the area with which the members of the Academy are mostly concerned. . . . A simple mimeographed booklet of forty or fifty pages should suffice as a start.

There is some evidence these original objectives were intentionally understated to overcome political opposition within the Academy to the new journal (Adams & Davis, 1986). In the editorial statement appearing in the very first regular issue, attention seems to have shifted to the publication of "research findings and well-written articles" relating to the general purposes of the Academy (which did not mention teaching) and of news items of interest to its members. The first regular issue contained eight articles, only two of which explicitly focused on teaching issues, and no "News and Notes." If the initial issue looked suspiciously like a classic bait and switch to members of the Academy at the time, it's important to remember that this tactic is more closely associated with our colleagues in the marketing profession. In later issues, more articles devoted to teaching issues and a regular member news section were published.

With these initial objectives as the context, how do we judge the success of the *Academy of Management Journal* over its first 40 years? It is doubtful that the original members of the Research and Publications Committee recommending publication of the journal could have anticipated the stature it would achieve in the field of management. Whereas the journal began its life at a time when there were only two other scholarly outlets for management publications (Adams & Davis, 1986), presently there are dozens of journals in which Academy members might publish their research, and more journals are being created annually. Even in a very crowded field, *AMJ* has achieved the stature of a premier outlet for management research. Several pieces of evidence support this assertion. First, the number of submissions made to the journal each year had increased to 500 by 1996. In contrast, *Administrative Science Quarterly* (*ASQ*), which was first published 2 years before *AMJ*, received 306 submissions in 1996. In fairness, it should be noted that, even though it has fewer submissions, *ASQ* has a higher impact rating than *AMJ* in analyses of social science citations (Johnson & Podsakoff, 1994). Second, the number of citations to articles appearing in the journal has in-

creased steadily over the years. Table 4 presents annual counts of the number of times the average article published in *AMJ* was cited in the 5 years following its publication. The contrast between the earliest year for which published data were available (1965) and the latest year for which 5 years of published data were available (1991) is dramatic. In the 5 years following publication of the 24 articles appearing in the 1965 volume, the average article was cited .88 times, and 71 percent of the articles received no citations. In contrast, the 39 articles appearing in the 1991 volume were cited an average of 16.11 times in the 5 years following publication, and each article was cited at least once. Finally, multiple studies of journal quality have documented that *AMJ* is among the most respected publication outlets for research in management. Johnson and Podsakoff (1994) documented the increasing stature of *AMJ* during the 1980s, attributing the journal's ascendance to the quality of the articles published, an increased emphasis on theory building, and rigorous standards for acceptance.

Although when the journal was launched it was the only Academy publication through which members could communicate with each other, its current mission has focused on the publication of empirical research. *AMJ*'s specialized editorial domain has been made possible, in part, by the existence of other Academy publications that have assumed portions of its original domain. The *Academy of Management News* publishes news about

TABLE 4
Average Number of Times Articles Published in *AMJ* Were Cited in the Five Years following Publication[a]

Year	Average Citations	Percentage Receiving No Citations	Year	Average Citations	Percentage Receiving No Citations
1965	0.88	71%	1979	7.34	11%
1966	0.76	52	1980	7.68	5
1967	1.61	49	1981	8.84	2
1968	1.91	41	1982	9.82	3
1969	2.22	43	1983	10.65	5
1970	2.89	37	1984	10.93	3
1971	3.64	18	1985	11.25	2
1972	2.39	36	1986	11.51	0
1973	2.91	24	1987	12.87	0
1974	4.60	15	1988	13.27	4
1975	5.25	29	1989	18.68	0
1976	5.05	12	1990	15.95	0
1977	7.18	16	1991	16.11	0
1978	6.81	10			

[a] The data presented in Table 4 differ from the journal impact ratings published annually by William Starbuck and available on his Web page (www.stern.nyu.edu/~starbuc). Starbuck's data cover the citations in a specific year to articles published in the previous two years and are exponentially smoothed to remove random errors. The data presented in Table 4 are citation counts for the five-year period following publication of an article.

members and the divisions and interest groups within the Academy. Papers focusing on theory, and book reviews can come out in the *Academy of Management Review,* and articles intended for more of a practitioner audience have a home in the *Academy of Management Executive.*

Because the editorial domain of the journal has changed dramatically with the appearance of other Academy publications, it seems somewhat inappropriate to evaluate *AMJ* today against its original mission statement. Clearly unfulfilled, however, is the original mission statement's call for a publication outlet that allows members to discuss teaching and curriculum issues. Although other organizations publish teaching journals, the Academy has not yet made teaching and professional development issues a publication priority. At this writing, the Board of Governors is considering a proposal for a new Academy journal devoted to such issues. Approval of this proposal may hinge on one of the very same issues that threatened the implementation of the Academy's first journal—namely, cost. In some respects, not much has changed within the Academy when decisions about journal publication are debated.

It is also questionable whether the original mission of *AMJ* to reflect the interests of all Academy members has been completely achieved. The Academy of Management is a very diverse organization with 22 divisions and interest groups. Yet the articles published in *AMJ* are still dominated by several specific areas (see Table 2). The fact that some other areas within the Academy have specialized journals that offer researchers a more targeted audience for their research may in part account for this; *AMJ* may not be the journal of first choice for all members. In addition, as *AMJ*'s editorial domain has become more focused over time, its relevance as a publication outlet for members from certain divisions and interest groups may have diminished. Empirical research has a stronger tradition in some areas of the Academy than in others. Even though almost every ex-editor discussed the desire for the journal to be more inclusive with respect to types of research and areas of study published, this goal has been only partially fulfilled.

Finally, the extent to which work published in *AMJ* influences the practice of management, an issue given some prominence in the first editorial statement appearing in the journal, has been a subject of continuing concern over the years. This concern, at least as directed toward *AMJ,* was partially alleviated when *AME* began publication with the specific mission of reaching practicing managers. As suggested by both Michael Hitt's and my reflections below, however, there is increasing evidence that research published in *AMJ* is both of interest to the popular business press and of relevance to managers. The essential problem with the "relevance" of research published in *AMJ* may be the extent to which it is accessible to nonacademics. Even if practicing managers have time to read *AMJ,* which is doubtful, can they readily understand what is being discussed and quickly grasp the implications of the research results for how they manage? The editorial statement for the first issue of the journal admonished potential submitters that "esoteric writing will find no place in the Academy's Journal." Good intentions aside,

some may question whether the journal currently lives up to this guiding vision of its first editor.

AMJ: THE FUTURE

What might change in *AMJ*'s next ten years or so? This question can only be answered in the context of the changing environment of business and of business education. In his 1997 presidential address, Michael Hitt discussed two sweeping trends that are likely to influence management education: the technological revolution and globalization. Although these are not the only trends one could identify, they provide a convenient point of departure for speculating about the future of *AMJ*. Just as Hitt argued that each of these trends will have major implications for business, business schools, and the Academy of Management, the trends are likely to have implications for *AMJ* as well.

With respect to the technological revolution, Hitt (1998) cited the dramatic impact of the increasing use of computers worldwide. It's a safe assumption—some would argue, a "no-brainer"—that *AMJ* will become available in electronic form in the not-so-distant future. Even in 1997, the idea of a journal printed on paper and distributed by mail is beginning to seem quaint. The importance of knowledge and the speed with which it is diffused is likely to place increasing pressure on the Academy to make its publications available electronically. The increasing importance of globalization may have the same effect. Currently, approximately 20 percent of the Academy's members live outside the United States. Unless one forecasts a dramatic improvement in mail services (and who would be that foolish), the electronic dissemination of research results is likely to be the primary method by which we can ensure our international members receive new knowledge in a timely fashion.

The importance Hitt (1998) attributed to knowledge as a competitive advantage suggests that the critical role already played by *AMJ* in disseminating research results is likely to increase. Research on the differential effectiveness of various management practices and business strategies, for example, may become one more source of competitive advantage. Of course, the challenge will be to develop new knowledge on issues of importance to managers and make this knowledge available in a timely fashion. The length of time it now takes to complete major research projects and to have work submitted to the journal published—commonly a matter of years—works against the need for managers to have timely information. This may suggest a need for fundamental changes in how data are collected and in how journals process submissions. For example, electronic submissions are likely to speed up the process. When writing this introductory section, I electronically shared drafts with the current editor, who provided feedback and direction, usually the next day. Although it's hard to imagine a busy editor or associate editor doing this with every submission, it provides an example of how the time-consuming process through which manuscripts are revised and resubmitted could be shortened.

Other trends Hitt (1998) cited may suggest, at least to some, that the importance of journals like *AMJ* may diminish. For example, the growth in the number of corporate universities (now over 1,000) is a trend that is viewed as likely to increase in future years (cf. Mowday, 1997). At present, corporate universities primarily compete with academic institutions in the areas of training and knowledge dissemination. This could change, however, especially if managers who need new knowledge about practice don't feel they are being well served by the academic research community. Will corporate universities expand into the knowledge creation business? This may strike some as far-fetched, although ten years ago, who foresaw the dramatic increase in the number of corporate universities? If corporate universities or other research providers get into the knowledge creation business, it seems unlikely that they would use scholarly journals like *AMJ* to disseminate their research, thus perhaps further threatening the journal's relevance to management practice. With increasing pressure from groups like the American Assembly of Collegiate Schools of Business (AACSB) for faculties to take a stronger leadership role in contributing to industry knowledge and practice, it's even possible that faculty members, encouraged by changing reward structures in their schools, will be drawn to publication outlets that are more accessible to managers (cf. *A Report of the AACSB Faculty Leadership Task Force,* 1996; Mowday, 1997). The increasing number of trade books aimed at a management audience published by Academy members may be an indication this shift has already occurred.

It's also possible that the increasing threats to the tenure system and the growing use of contract workers in higher education may diminish the value of scholarly research and thus the importance of academic journals. For instance, the evaluation of faculty performance and the outcome of retention decisions may be increasingly influenced by shorter-term institution-building activities, such as contributions to the design and distance delivery of global M.B.A. programs, and less by the publication of research. Although there is a great deal of uncertainty about the implications of changing employment practices in business schools, the increasing emphasis placed on knowledge as a competitive advantage suggests that research on management will, if anything, become more important. Hitt (1998) predicted that "top-quality, cutting edge research on management" is unlikely to diminish in importance. However, this still leaves open the interesting possibility that there could be an increasing differentiation between faculty members who produce new research knowledge and those who disseminate it. In addition, Hitt's prediction doesn't necessarily imply that university-based professors will be the only providers of cutting-edge research.

Clearly, the future will present both threats and opportunities to the continued success of *AMJ.* Even in this brief account, one can see a great deal of stability in the 40-year history of *AMJ.* It is also possible to document a degree of flexibility and change, both with respect to editorial domain and the types of research the journal has published. One key to *AMJ*'s continued success may lie in maintaining both the stability and flexibility evident in

the past: stability with respect to the importance placed on publishing only high-quality research, and flexibility with respect to how submissions are processed, what gets published, and the form publication takes.

REFLECTIONS OF THE PAST EDITORS OF *AMJ*

As indicated earlier, each of the living past editors of *AMJ* was contacted to write a reflection on his or her term as editor and on the field of management at the time. Three of the past editors have unfortunately passed away (Paul Dauten, Dalton McFarland, and L. L. Cummings), and one who is retired chose not to contribute (William Scott). As the following reflections suggest, the past editors found it far easier to discuss issues associated with editing the journal than trends in the field of management during their terms. In retrospect, this may not be terribly surprising, since the three-year term of an editor may simply be too short to reveal longer-term trends. Moreover, the workload associated with editing *AMJ* may simply overwhelm the ability of an individual to take a broader perspective on the field.

Reading between the lines, one gets an impression of what it was like to be editor of *AMJ* at different times in its history. The earliest editors discuss some of the trials and tribulations of the physical tasks of getting the journal printed, bound, and sorted for mailing. During these early years, the editors didn't have the luxury of being assisted by a business manager, production editor, copy editor, advertising director, and printer who handled the mailing tasks. In contrast, more recent editors have had the luxury of receiving greater assistance, freeing them to focus their attention on other issues.

The reflections of the past editors reveal both similarities and differences in their approaches to the editorship and their memories of the position. With respect to similarities, almost all comment that serving as editor was among the most rewarding and challenging assignments of their careers. The rewards come from learning broadly about the field of management and the opportunity to interact with talented and dedicated scholars. The challenges derive from the tremendous workload, often entailing sacrifices of personal and family time, and from the opportunity to interact with talented and dedicated scholars.

With respect to differences, some editors came to the position with well-articulated goals and clear ideas about how to change the journal. Perhaps most who have occupied the position of editor, however, have felt that they inherited a healthy journal in which few changes were needed. This latter group had more modest goals, viewing themselves primarily as stewards of one of the Academy's most valuable assets.

As I suggest in my reflection, each editor faces similar fundamental dilemmas. These dilemmas have their origin in the fundamental purpose of publishing the journal, the heterogeneity of the Academy of Management, and the tension that exists between exerting strong editorial direction and following the advice of reviewers and consulting editors. How these dilemmas are resolved shapes the direction of the journal during that individual's

time. For example, John Miner felt that the needs of the Academy's members, if not also the field of management, would be better served by publishing a larger number of articles. Thus, he published more than twice the number of articles his predecessor had. In contrast, I discuss the importance I attached to publishing only the highest-quality scholarly contributions to the field of management and of increasing the stature of the journal. I published fewer articles but, like both Janice Beyer and Michael Hitt, gave authors greater leeway to discuss their research in depth. Another difference revealed by the editors was in their responses to the diversity of the Academy and to the fact that the flow of manuscripts, if not also their quality, was uneven across the divisions. John Slocum reports being very sensitive to the criticism that the journal had been dominated by the "O-divisions" and that he consciously tried to shape his Editorial Board and acceptances to accommodate some of the smaller divisions. I was less sensitive to these concerns, letting the composition of my board be shaped by the flow of submissions and trying to hold all submissions to high (but not necessarily the same) standards of quality.

One senses from these reflections that each editor, whether he or she entered with specific goals or not, left the role with an unfinished agenda. Some editors implemented changes that did not survive their terms. Other editors tried to implement changes but were only partially successful. Some of the changes mentioned as innovations by later editors were actually a return to past practices at the journal. For example, William Scott published special theme sections of the journal beginning in September 1970, a practice that was essentially reintroduced under Michael Hitt's term as special research forums. The recent decision by the Board of Governors to have associate editors of the journal (discussed by Angelo DeNisi) returns to the model evident in the earliest years, although whether the early associate editors had discretion to accept or reject manuscripts is unclear.

Although it may come as a surprise to many readers, only one past editor mentions the power associated with the position. Many Academy members see the role of journal editor as a position of power from which one can shape the direction of the field. Most who have served in this position, however, realize that their power is limited. An editor's ability to shape the field of management is constrained by the fact that one cannot publish something that hasn't been submitted. In important respects, it is the contributors to the journal who define and shape the field of management. Moreover, whatever power editors may think they possess is quickly overwhelmed by the workload associated with the position and by the stark realization that they must rely on the advice of others on manuscripts from areas in which they do not have expertise. Finally, although explicitly mentioned by only one individual, it's doubtful that any of the past editors failed to feel the weight of having to make so many negative decisions. This may not be a part of the job that most ex-editors voluntarily recall, if only because it brings forth unpleasant memories of having to disappoint so many colleagues.

The collected reflections of the past editors that follow represent the institutional memory of a group of individuals who have been asked to

manage one of the most important assets of the Academy of Management. The job of journal editor is challenging. However, few past editors would disagree that being selected to serve the Academy as the editor of its oldest journal was among the highest honors of their careers. So it was for them, so it will hopefully be for those who follow in the position of editor of *AMJ.*

REFERENCES

A report of the AACSB Faculty Leadership Task Force. 1996. St. Louis: American Assembly of Collegiate Schools of Business.

Adams, S. A., & Davis, K. 1986. *Academy of Management Journal:* The first decade. In D. A. Wren & J. A. Pearce III (Eds.), ***Papers dedicated to the development of modern management:*** 89–94. Academy of Management.

Hitt, M. A. 1998. Presidential address: Twenty-first century organizations: Business firms, business schools, and the Academy. ***Academy of Management Review,*** 23: In press.

Johnson, J. L., & Podsakoff, P. M. 1994. Journal influence in the field of management: An analysis using Salancik's index in a dependency network. ***Academy of Management Journal,*** 37: 1392–1407.

Mowday, R. T. 1997. Presidential address: Reaffirming our scholarly values. ***Academy of Management Review,*** 22: 335–345.

News and notes. 1960. ***Journal of the Academy of Management,*** 3(1): 69.

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RECOLLECTIONS OF A PUBLISHING ENTHUSIAST

PAUL J. GORDON
Editor: 1964–66
Indiana University at Bloomington

In this article by the most senior past editor of this journal, a short history of the journal's earliest days precedes his account of his own term as editor.

BEGINNINGS

The *Journal of the Academy of Management,* later the *Academy of Management Journal,* was launched as volume 1, number 1, in August 1957. This issue was also designated as April 1958. Volumes 1 and 2 included three issues each, were mimeographed and bound, and were priced at $ 3.00 per year; single issues were $1.25, and there was a higher price for overseas subscriptions.

The first editor was Paul M. Dauten, Jr. (University of Illinois), and the associate editor was Dalton E. McFarland (Michigan State). In addition to the editors, others on the Research and Publications Committee who served as an editorial board were Wayne Broehl (Dartmouth), Dale E. Henning (U. of Washington), and Preston P. LeBreton (recently, U. of Washington; then, Louisiana State). Editorial consultants were Ralph C. Davis (Ohio State), Franklin E. Folts (Harvard), Billy E. Goetz (MIT), William Gomberg (U. of Pennsylvania), Harold Koontz (UCLA), Merten J. Mandeville (Illinois), John F. Mee (Indiana), Ronald B. Shuman (Oklahoma), and Harold F. Smiddy (General Electric). Keith Davis (Arizona State) was added in 1960.

Volume 3 (1960) was the first to be professionally printed. Preston P. LeBreton joined McFarland as an associate editor. With volume 4, Dalton McFarland became the second editor, and Wayne Broehl became a second associate editor with LeBreton. At that point, the Editorial Board included David W. Belcher (San Diego State), Lee Danielson (Michigan), Robert Fetter (Yale), Claude S. George (North Carolina), Dale E. Henning (U. of Washington), Wayne L. McNaughton (U. of California, Los Angeles), Stanley J. Seimer (Syracuse), Charles E. Summer, Jr. (recently, U. of Washington; then, Columbia), and myself (Indiana). McFarland began including dissertation abstracts in the journal. "Management News and Notes" was a feature from the start. With volume 4, Paul Dauten joined the editorial consultants.

With volume 5, Bela Gold (Pittsburgh), Richard F. Ericson (George Washington), and William Voris (recently, Thunderbird; then, Los Angeles State College) replaced George, McNaughton, and Seimer (all named above)

as Editorial Board members. Seimer subsequently rejoined the board. Editorial consultants continued as above. Volume 6 (1963) was the first to appear with the title *Academy of Management Journal,* and the Academy of Management logo, since widely used, first appeared. Volume 6 was also the first with four issues. I joined Preston LeBreton as an associate editor. LeBreton and I each edited one issue while McFarland was in Italy. I became editor for volumes 7, 8, and 9 (1964 through 1966 inclusive). Also, William G. Scott (U. of Washington) joined LeBreton as an associate editor in 1966.

By 1966, the Editorial Board had been expanded. In addition to those cited earlier, the new members included Jean Boddewyn (recently, Baruch; then, New York University), Warren Brown (recently, Oregon; then, Indiana), William R. Dill (recently, Bryant; before that IBM, NYU, and Carnegie), William V. Haney (Northwestern), Charles R. Klasson (recently, Iowa; then, Texas), Joseph R. Litterer (most recently, William and Mary; before that, U. of Massachusetts; then, Illinois), Raymond E. Miles (UC Berkeley), Powell Niland (Washington), Joseph P. Schwitter (Kent State), and Richard D. Robinson (then, MIT). The expanded editorial group at least in part represented a shift from more exclusive identification with general management principles and processes, personnel administration, and production as then perceived and taught. The journal increasingly emphasized behavioralism, quantification, operations management, internationalism, general systems, multidisciplinary research, and clinical relevance, with continuing respect for those who represented more traditional approaches. The search for knowledge about management was shifting from an emphasis on the unique or the universal to an emphasis on identifying contingencies and patterns. The sixties stood for change!

Many of the foregoing were concerned with bringing to bear theoretical and especially methodological (hard-nosed empiricists, anyone?) approaches to developing knowledge *about the field* of management as perceived and taught by academics. Among these, there were ample and sometimes contentious differing views. Battle cries included quantitative versus behavioral and rigor versus relevance!

Meantime, unimpeded by academic squabbles, *clinical practitioners of managing* were facing relatively new challenges. To these, some responded only partially or belatedly years later. The unsaturated U.S. markets that followed World War II were no longer. The products of other countries conveniently written off as shoddy were improving. Mass production, mass distribution, and capitalizing on "planned obsolescence" were no longer sufficient as a single formula to cover negligence. But as late as 1980, Hayes and Abernathy's "Managing Our Way to an Economic Decline," an article published in the *Harvard Business Review* that attributed difficulties not to all those wicked Japanese, labor unions, and government regulators but to management, was not universally welcomed. Ralph Nader and social responsibility were blossoming, and the auto, tobacco, and pharmaceutical industries were targets. Gearing up for international competition was less than widespread.

The impact of the Ford and Carnegie reports on education for business was finally to be noted in conservative institutions. Within schools and in the Academy, there were multicultural digestive problems in assimilating changing academic and worldly developments.

MY TERM AS EDITOR

To account for myself as editor, I take from an earlier report on the *Journal's* first decade put together by Sheila Adams (North Carolina-Wilmington) and Keith Davis (Arizona State). He was in at the beginning. I have added slight editing for clarity.

"The third editor, Paul J. Gordon (Indiana University), served apprenticeships as reviewer, associate editor and guest editor for one issue before taking office. His reflections were these:

> There was still concern about representativeness for the *Journal,* traditional versus behavioral and so on. I saw the *Journal* as our most public indicator of our continued effort to upgrade and to disseminate our collective learning. My own view was that the *Journal* should represent the best efforts of the Academy to bring discipline building to the continued upgrading of clinical practice. In this, I was appreciative that my own piece on "transcending the debate on administrative theories" had just appeared because I was reluctant to approve articles under my own name at that still politically tender early period. Further, my own long-held view has been that the only point in holding an office is to put it to larger constructive use. I was in full agreement with McFarland's three-year limit as editor, probably one to learn the job, one to make a contribution without making it too much a one-person show and one to provide for succession.

"Gordon's telephone observation to Keith Davis was that among many contributions and contributors, Dauten got it started, McFarland got it into print as a professional venture, Gordon encouraged young researchers (a Peter Drucker observation), and Vance (with his production background) got it out on time! William G. Scott added his special editorial and literary style.

"With extraordinary help from Robert Henderson (then, Bowling Green) and Scotty Robb (then, Oklahoma) on business and subscriptions, Gordon devoted himself to working directly with authors, reviewers, and advertisers. Despite the great work of predecessors, sufficiency of manuscript and money were still problematic. At takeover, there were seven manuscripts (some in need of rewrite), and enough money to pay for the previous printing. Follow-up with generous advertisers and university financial support continued to be crucial.

"Editorial comments and special issue themes were begun in December 1965 with "Comparative Studies," followed at intervals by "Myth and Reality" and "Theories of Organizations." The December 1966 issue included a forum on cases and policy courses with Arthur L. Svenson (NYU), Uliano G. Mazzucato (Padova, Italy), Paul Gordon as editor and William H. Starbuck (then Purdue, later worldwide, and now NYU) as participants.

"[Gordon's] concluding December 1966 issue proposed a continuity of features for readers to anticipate, insofar as possible, such as research in progress in March, book review index in June, dissertation abstracts in September and special themes in December. [He noted] 'My recall is that I turned the editorship over to Stan Vance with a balance of $15,000 and advice to follow up with advertisers.' "

For me personally, extended association with the *Journal* was a demanding but significant and therefore worthwhile expenditure of my then best efforts. My "The Top Management Triangle in the Voluntary Hospital (I) and (II)" (December 1961 and April 1962) was reprinted in *Hospitals,* the official journal of the American Hospital Association, and reprinted again by the American College of Hospital Administrators as their award article of the year. That led to two terms on their editorial board and sustained mention in the *Social Science Citation Index.*

In all, I spent 14 years, one way or another, in some kind of reviewer capacity before I volunteered to make space for others to follow. That sustained service was a help to me and my students at Indiana and abroad over many years and especially in mentoring a sizable number of doctoral students, at Indiana then and most recently, in Finland and Portugal.

In my reckoning, *visibility,* judiciously obtained and based on striving for quality and service, is an important ingredient of an academic career. I must also include *integrity.* Publish or perish needs a more positive interpretation. It constitutes a form of continuing self-education without which one may well perish. For me, subsequent publication, recognition, and awards are a matter of record. Especially as one who describes himself as a "mixed bag" of experience and disciplines who did everything backwards (jobs then degrees), the *Journal* was a confirming experience in becoming a bilingual academic, able to speak to both colleagues and practitioners.

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THE ACADEMY OF MANAGEMENT TAKES OFF

STANLEY C. VANCE
Editor: 1967–69
University of Oregon

Like Ole Man River, the *Academy of Management Journal* just keeps "rollin' along." A third of a century ago, in 1967, when I was designated editor of volume 10, I became the fourth editor of this now prestigious journal. We obviously "rolled along," because in my three-year span our readership skyrocketed from almost 1,700 to 2,152 readers, a one-third increase in a three-year period. We were on a great roll, and whereas manuscripts earlier had had to be solicited, they now began to appear freely, and we could afford to be selective. Qualitatively, we had recently witnessed Harold (Howdy) Koontz's major contribution, "The Management Theory Jungle," a big step forward.

Like all proud papas, the new editor looked around to see how he could better his progeny. Of course, we could try to get more discipline-shattering articles, but the older, better-heeled management journals had a real head start on us. Among the ideas my advisors and I came up with was to take "Editorial Comment," a long-time mainstay, and modify it into a sort of lead idea.

Sending the progeny forth into the world was a demanding task. Zip-coding—that is, assigning a specific number to each post office destination—was a new post office mandate. Second-class mailing privileges depended on using zip codes. But privileges come at a cost. The editorial office had to sort mail by zip code numbers, tie related numbers into bundles, and then bag like-zipped bundles into pouches for ultimate mailing and distribution. Using cord for tying was a lethal operation. As was befitting the Academy, we used the best available cord, probably from cannabis (hemp). All of us stackers (including the editor) lacerated our academic hands, sloshing blood over the newly minted journals. This gave rise to the expression "those bloody journals!" Needless to say, I had to scrounge for a new team of bundle-wrappers for each issue's bloodletting; and we paid the students below-bottom wages but had no union organizing or strikes.

Mandated zip-coding had an unexpected benefit: it gave us a better feel for our readership. For instance, it might be assumed that the bigger the institution and the higher its prestige, the more important it was for our periodical. To our surprise, the Ivy League and comparable schools did not do very well, with Dartmouth, Cornell, Chicago, and Princeton representing few subscriptions. This is certainly not an outright indictment of these respected institutions. Yet on this evidence they certainly cannot claim leadership in the management sphere.

Conversely, instead of the prestigious high-cost private schools giving us up-to-date management leadership, it was the big public institutions, the "proletariat schools," we could/should look toward. It was a shock to me to find my own alma mater (Ph.D. 1951), the University of Pennsylvania, a long-time private school, not too far up the list, rating lower than its more plebeian sister school, Pennsylvania State.

Topping this minisurvey was Michigan State, followed by UCLA, Washington (Seattle), NYU, Illinois, Indiana State, Ohio State, Southern Cal, and Texas. You can argue that sample size or some other statistical fluke had some effect on the study. But enough of this seeming stress on arithmetic. At this juncture let's put our foot into linguistics and matters of policy.

Early in the first year of my editorship, I had an opportunity to spend the summer on the shores of Lake CHARGOGGAGOGGMANCHAUGAGOGCHAUBUNAGUNGA-MAUGG, on the tricorner abutting Massachusetts, Connecticut, and Rhode Island. In native American (Pequot, I presume), its name means "You fish on your side of the lake, I'll fish on my side, and no one fishes in the middle." At the time, the wisdom conveyed in this sesquipedalian word had a lot of significance. Would not the world be a much happier place if we all stayed in our own bailiwicks? Instead of everyone putting their two cents into others' business—for example, the Chinese in Tibet, the British in Ireland, the Russians in Lithuania and the other Baltics—let's stay on our side of the lake and venture forth only when invited. But change is of the essence; the lake's name was changed to Lake Webster, and business schools and the journal were venturing into new bailiwicks.

In an issue called "The Academy and Ecumenism," we showed how this big four-syllable word had worked big things not only in religion but even in corporate endeavor, particularly in conglomeration. Here also there was a focus on how supportive industry had become of business education, particularly with endowments. Yet at that time there were only 65 endowed chairs in business administration. Among the earliest was the H. T. Miner Endowed Chair in Management at the University of Oregon, held by your then editor. So from experience, I can attest to the good this ecumenism bestows on business and business administration and on the broad area of all education.

One big reason for the journal's success continues to be the democratic collaboration through which the excellent articles published are selected and reviewed. Initially, there was a board of nine editorial consultants, largely professors, but including Harold F. Smiddy, associated with G.E., and Bill Gomberg, of labor relations fame. Of course there were the old stalwarts: Ralph C. Davis, Franklin Foltz, Billy E. Goetz, Harold Koontz, Merten J. Mandeville, John F. Mee, Ron B. Shuman.

Today, in our quest for excellence, the Editorial Board has been expanded to almost 60 scholars. This ensures there will be minimal, if any, cronyism, and the focus will continue to be qualitative. If periodicals were proper subjects for the Shingo awards, the *Academy of Management Journal* would be a proper subject for capturing "first prize" in quality.

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PARTICIPATING IN PROFOUND CHANGE

JOHN B. MINER
Editor: 1973–75
Georgia State University

A little history may make my title more meaningful and this description of my experiences as editor more comprehensible.

During the 1950s and 1960s, a substantial number of behavioral scientists, and psychologists in particular, took up residence on business school faculties (Blood, 1994). This influx, fostered to a substantial degree by the activism of the Ford (Gordon & Howell, 1959) and Carnegie (Pierson, 1959) Foundations, gradually transformed the field of management. It resulted in the creation of organizational behavior as a major component of the management discipline in the late 1950s, although the origins of organizational behavior have been traced back, inappropriately in my opinion, to as early as the late 1940s (Greiner, 1979). In any event, by the early 1970s many business schools were experiencing what has come to be called the behavioral science revolution. This revolution was fostered in large part by economists who viewed the advent of psychologists and other behavioral scientists as a means of bringing greater respectability to business education within the halls of academe. The goal of establishing a strong scientific base and thus helping to rid the business schools of their perceived second-class citizenship was central to the thinking of deans and other decision leaders of that period (Miles, 1996).

As a consequence of this change, a certain amount of conflict with the status quo was generated in some, but not all, venues, and many behavioral scientists found themselves immersed in a high level of role ambiguity. There was great freedom to "self-actualize" as one thought best, but at the same time little by way of structure to define what was externally considered best (Nord, 1996). Some people thrived in this context of uncertainty, some did not.

JOHN B. MINER, AS EDITOR, AGAINST THE GROUND OF THE BEHAVIORAL REVOLUTION

Miriam Erez (1996: 19) had the following to say about a completely different context than the one at issue here. Nevertheless, her comments are eminently germane:

> Figures have meaning only when contrasted with the backgrounds that surround them. Similarly, the meaning of information is shaped by the context in which it appears, and individu-

> als end up making different decisions based on the same source of information when the context changes (Tversky & Kahneman, 1981).

I, as editor, was a figure on the ground of the behavioral revolution, and what I did and how it was perceived were largely shaped by that ground. My degrees are all in psychology (clinical and personality theory); my various immigrations into the business schools (from a psychology department and a business personnel research unit) occurred in the period 1956–60; my business school sponsors and mentors were all economists (Eli Ginzberg at Columbia, George Taylor at Wharton, Richard Lindholm at Oregon). It was inevitable that someone like me would eventually become editor of *AMJ*, given the thrust of the times. In large part my editorship was a symbol of that thrust.

The role ambiguity and uncertainty that characterized my classroom experiences and the rest of my organizational environment were in no way lessened by taking over the editorship of *AMJ* in 1973. That year was also my first as a fellow of the Academy and my first on the Academy's governing board. My only office in the organization had been as chair of the OB Division the preceding year, and at that time the divisions were so new that there was little consensus as to either their role or their merit. I had not served as an associate editor of *AMJ*, or even been a member of the Editorial Board, as most of my predecessors had (Stanley Vance is the only exception to my knowledge). My experience with the journal publication process as a whole was spread across a number of journals but was nevertheless quite modest. Then, as now, I was primarily a book writer (less than 10 percent of the printed pages I had written had appeared in journals).

The point is that, although the Academy of Management even then had a goodly history and a well-established culture, my knowledge of all this was minuscule, and on top of that my grounding in the journal publication process was rather limited. Probably at the time my ignorance was not fully apparent to me, but looking back it was glaring. The only saving grace is that almost anyone else symbolizing the behavioral revolution who entered into the editorial role at *AMJ* at that time would have exhibited many of the same shortcomings.

CHRONICLES OF CHANGE

One of the first changes I introduced was the elimination of the editorial consultants designation. These consultants were a group of distinguished Academy members, primarily past presidents and/or *AMJ* editors, who had long been recognized by giving them equal billing with the Editorial Board members who actually reviewed manuscripts. The editorial consultants were offered the opportunity to move to active status and become members of the newly constituted and expanded editorial review board. Five of the 14 consultants did make the move and subsequently did a goodly amount of reviewing—three past *AMJ* editors (Dauten, McFarland, and Gordon) plus

Harold Koontz and Harold Smiddy. My rationale for this change was that those who were doing the work should get the credit. Others may well, however, have viewed this change as a revolutionary rejection of precedent. At the time I had no idea how the editorial consultants came into existence or how long the group had served. Ignorance can foster change; with more knowledge of this situation it might well have been more difficult to challenge established traditions.

Another early change was to establish a formal position of production editor. Again, there was a need to obtain knowledge that I did not possess. The first holder of this position was my then wife, Mary Green Miner. Often apparent nepotism of this kind is expected to operate to the detriment of an organization. In this case I believe it operated to the clear benefit of the Academy. Mary was well qualified for the position, and she made many valuable contributions. It is not apparent, however, that the nepotism worked to the advantage of our marriage; in my opinion this was anything but the case. In short, there was a reverse twist on the expected pattern—the organization prospered, but the marriage did not.

One of the charges given to us as editors in preparing these essays for *AMJ* was to "discuss how you tried to have an impact during your term as editor by encouraging certain types of work." I did not intend to encourage any particular content category. In fact, I have been committed throughout my professional life to encouraging diversity in this regard (Miner, 1993). This is why we did not have any special-topics volumes throughout the term of my editorship. We tried to publish the best of what came our way, no matter what its positioning within the field of management. However, my status as a representative of the prevailing behavioral science revolution clearly had certain implications. I favored research over discussion pieces, and if the latter were to achieve publication, I strongly endorsed clearly stated, testable theory. In short, under my editorship there was a marked scientific thrust, consistent with my origins. I believed this was what the Academy wanted when I was appointed. The manuscript flow was of a kind that generally appeared to indicate appreciation of this tack. But there were dissenters as well. The shift to a set of review criteria that at the time more closely approximated those of journals such as *Personnel Psychology* and the *Journal of Applied Psychology* may have been one of the most significant changes in *AMJ* during my editorship.

During the early 1970s, *AMJ* submissions increased at an average rate of 30 per year. By the second year of my term as editor, this rate of increase had nearly doubled, in large part I believe because we were appealing to an expanded range of contributors. Partly because of the increasing rate of high-quality submissions and partly because the Academy's Board of Governors at the time was highly sympathetic to the idea of increasing the number of journal pages published, a publication planning committee was constituted early in my editorial term. The major charge to this committee from Academy president Charles Summer was "to evaluate various proposals for new publications."

The committee consisted of Larry Cummings, Keith Davis, Robert House, Thomas Mahoney, Lyman Porter, George Steiner, and me. The meeting at which this committee decided on its final recommendations was held on the Irvine campus of the University of California in early 1974. If my memory serves me correctly, everyone was there except Larry. Larry really tried. Unfortunately, however, flights out of Madison, Wisconsin, that day were canceled because of snow. I remember calling him with the results of our deliberations after the meeting ended. As we had anticipated, he was in complete agreement.

What we recommended, and the Academy's Board subsequently endorsed, was that *AMJ* concentrate entirely on empirical research. A new journal, to be called the *Academy of Management Review,* would begin publication in 1976. The conceptual papers previously published in *AMJ* would now appear in *AMR.* These would include theoretical pieces, literature reviews, historical analyses, essays, commentary, reports on practice, and book reviews. At least one issue per year would be devoted to review articles dealing with major topics in the management field.

AMR was indeed initiated in 1976 with Max Wortman as its first editor. Not all subsequent editors have followed exactly the blueprint we laid down. However, until the present issue *AMJ* has remained a compendium of reports of original empirical research. After this brief slip, to allow former editors to vent their feelings and challenge their memories, I assume *AMJ* will return to normal.

Attempted Changes—Not Profound

The changes I have described to date have remained in place. I also had another agenda for change that, although implemented in various ways, seemingly had little impact; it has now been largely aborted by subsequent editors. I may well have been attempting the impossible.

This agenda arose out of an intense concern of mine that many young researchers were being driven away from the publication process because their initial contacts with that process were perceived as cold, devoid of empathy, rude, personally rejecting, and uninformed. I knew of no evidence that being a good researcher and having a very thick skin are positively correlated; yet many of our journals seemed to assume such a correlation. This concern arose in part out of my experiences in working with graduate students, but I will have to admit it had a personal origin as well. Many of my rejection letters have left me hurt and angry; I am sure I am not alone in that reaction (cf. Ashford, 1996; Frost, 1985).

In any event, as editor I resolved to try to do something about this situation—to introduce a more humane approach. One innovation to this end was to send reviews of rejected manuscripts only to those who asked for them. My rejection letter indicated that reviews were available and would be provided on request. In about a third of these cases no request for reviews was ever received. When reviews were sent, I often edited them, usually by deleting the more disparaging statements. My rationale was that since these

reviews were anonymous in any event, no pride of authorship was involved, and perhaps some bad feeling could be avoided.

My review board was relatively large for the manuscript flow, and outside reviewers were rarely employed. My hope was that this would help prevent any loose cannons from hurling shells directly at our authors' egos. I thought it would be easier to encourage a culture of civility in a stable group known to all. To some extent, this appeared to be a correct assumption. However, the downside was that, if equity were to be maintained, and the workload distributed evenly, some reviewers would have to review some manuscripts outside their normal areas of expertise. I was able to match the increasing number of articles that raised experimental design and statistical issues rather well with reviewers who had backgrounds of these kinds, but matching on content domain was another matter. On occasion a manuscript did come back unreviewed with a note to the effect that the reviewer did not feel qualified to comment in the particular area.

A final approach intended to reduce author antagonism involved the familiar "revise and resubmit" situation. My view is that if a manuscript is good enough to encourage revision, and the author makes an honest attempt at improvement, that manuscript should rarely be rejected (although multiple revisions may be necessary before acceptance). Ultimate rejection of a "revise and resubmit" reflects an initial error on the editor's part, and the author should not be made to pay the price for that. Needless to say, we accepted and published a high proportion of "revise and resubmit" articles during my editorship.

These attempted changes were, and remain, controversial. Most are currently "dead in the water." (For a statement of more recent thinking on these matters, see Beyer [1996a]). Nevertheless, I am convinced we still have an unsolved problem here. How can we minimize the negative feedback that drives many talented researchers, and theorists too, away from the journal publication process?

Increases in the Size of *AMJ*

There is no question that during my years as editor *AMJ* experienced a major increase in its size. This was not a gradual progression; it was a quantum leap. In the six years from the time William Scott took over to the time I bowed out, the journal's page count more than doubled. The figures are as follows:

Year	Editor	Number of Pages
1970	Scott	464
1971	Scott	551
1972	Scott	583
1973	Miner	724
1974	Miner	808
1975	Miner	944

Furthermore, the number of substantive articles and research notes[1] more than tripled in this period. The pages per article went down as the pages per issue went up. This was a conscious effort. We wanted to provide as much information (and as much diversity) as possible in the space available. Many manuscripts submitted as full articles became research notes. There was some heavy editing on occasion, much of it done by the editor himself. This fact has not gone without note (cf. Kerr, 1995).

Unlike the increase in the number of substantive articles and research notes, the increase in the number of pages was not planned. It created considerable extra work for a good many people. Factors fostering the increase were a steadily rising number of submissions of high quality and from new sources; an Academy Board willing to budget for growth; and the introduction of an advertising program that substantially increased the number of paid space ads, as well as the income from that source (which could be plowed back to fund growth).

Two other possible causes of the page increase bear noting. In my concern for the health of our authors' egos, I may have loosened acceptance standards somewhat and thus published more articles than I should have. I do not believe this to be the case; nevertheless, the articles are all out there on public display, so that anyone wishing to do so can make judgments in this regard. Secondly, I may have consciously or unconsciously boosted *AMJ*'s size in order to demonstrate that it had outgrown its clothes and needed a new wardrobe to cover part of its body—the *AMR* part. This is certainly possible, but I must have been crazy to keep on adding pages in 1975, after the decision to move to two publications already had been made.

CHANGES DURING THE PAST 20 YEARS

Among the charges we received with regard to writing these essays was the suggestion that we speculate on "what has changed in the field of management since you were editor." This is a large order, and I hope to address it in some detail in a book I am now writing (Miner, forthcoming). However, some personal experiences with *AMJ* over the years may help to provide a partial answer.

During the 20 years following the early 1960s, my articles were published rather regularly, although certainly intermittently, in *AMJ*. There were rejections, but not many. Since 1981, I have had nothing published in *AMJ* until now. My submissions have been at least the equal, in both number and I believe quality, of those submitted during the prior 20 years. There is a major disparity here; either I or *AMJ* has changed rather dramatically.

One real possibility is that as *AMJ* has achieved increased stature and introduced higher standards, I have fallen below the established profes-

[1] The research notes were introduced as my editorship began, to replace a communications section that had contained conceptual pieces as well as some data-based research, which was gradually phased out.

sional criteria for publication. This possibility seems unlikely, largely because these same articles have ultimately often found homes in equally prestigious journals of a somewhat different orientation. My assumption is that *AMJ* has changed in some other way, although this interpretation could well be self-serving, and I cannot prove otherwise.

However, let me assume that *AMJ* has changed and my experience has some basis in the reality of that change. Perhaps others have seen something similar. What could account for this? A possibility is that what I am describing is grounded in the nature of my typical research approach. I often conduct highly evaluative studies utilizing what has previously been called the personnel (now human resource) research paradigm. How well can instruments or constructs serve to identify people who will perform well, or procedures that will help them to do so? This has been the major thrust of my research. I think *AMJ* has turned away from that type of thrust, and that this accounts for the disparity between my first and second 20 years.

Let me be more specific about this paradigm. It appears to have its origin in the various test validation designs. However, it also extends to validation of any recruiting or selection procedure, construct validation, evaluation of training, and any evaluation-of-change procedure. The central intent is to establish what works best to accomplish organizational goals. Positivistic research of this kind has been openly attacked in the literature of organization development and organizational change that heretofore relied on such studies to demonstrate the organizational relevance of various types of interventions (Lawler, Mohrman, Mohrman, Ledford, & Cummings, 1985; Tannenbaum, Margulies, & Massarik, 1985). These attacks appear to indicate that such research is now outdated, even anachronistic—a view I find difficult to accept.

Many may quarrel with my interpretation, and many may agree but view the change as desirable. All I can say is that, without evidence to the contrary, this view seems a reasonable interpretation—and if this is the case, I cannot help but feel that the rejection of the personnel research (human resource research) paradigm is a serious mistake. We need to know what works for organizations in a human resource sense. This question is typically oriented to managerial or strategic goals, and in the prevailing value climate, goals of this kind can be a problem (Miner, 1974). Nevertheless, in the context of an objective science, we should never fail to look at any finding that is based on solid research evidence.

One often finds evidence suggesting that *AMJ* has come to mirror the *Administrative Science Quarterly* (cf. Beyer, 1996b). Yet an absence of research using the personnel paradigm did not characterize *ASQ* in the 1960s and early 1970s, a period in which I frequently published there. My shut-off at *ASQ* occurred some ten years earlier than that at *AMJ*. This lag is associated with a substantial rise in the acclaim accorded to *ASQ;* there is a correlation. *AMJ* may very well have followed *ASQ* in search of the same high reputation. Certainly *ASQ* cannot now be considered an outlet for personnel research in the same way that the *Journal of Applied Psychology* is.

One cannot quarrel with success, but there is a downside. Never terribly popular with practicing managers, *AMJ* has lost even more ground in this regard. The demise of the personnel research paradigm appears to have hurt us here. I am not entirely sure what this means for the *Academy of Management Executive,* but my assumption is that the Academy of Management and management practitioners have pleaded permanent incompatibility. Maybe *AME* should change its name. In any event, the Academy of Management stands for a degree of diversity that *ASQ* has no need to espouse. We may well have been seduced from our key mission by our archrival, *ASQ.*

My point is that *AMJ* needs to open its doors to a broad range of scholarship. Special issues and selective screening of manuscripts will not do this. I am not trying with this argument to create a more favorable climate for my own articles; I have done O.K., and it is a little late for that in any event. However, I am trying to argue for a wide-open *AMJ,* like the one that permitted the behavioral revolution to intrude on it in the first place.

CONCLUSION

How do I feel about my editorship? It was a lot of work, but I loved it. It was constructive work, and some changes really did occur. Some did not, but that is inevitable. There is always the hope that even some of my not-so-profound innovations will see further application in the future.

REFERENCES

Ashford, S. J. 1996. The publishing process: The struggle for meaning. In P. J. Frost & M. S. Taylor (Eds.), ***Rhythms of academic life: Personal accounts of careers in academia:*** 119–127. Thousand Oaks, CA: Sage.

Beyer, J. M. 1996a. Becoming a journal editor. In P. J. Frost & M. S. Taylor (Eds.), ***Rhythms of academic life: Personal accounts of careers in academia:*** 287–297. Thousand Oaks, CA: Sage.

Beyer, J. M. 1996b. Going with the flow. In D. Cyr & B. H. Reich (Eds.), ***Scaling the ivory tower: Stories from women in business school faculties:*** 141–159. Westport, CT: Praeger.

Blood, M. R. 1994. The role of organizational behavior in the business school curriculum. In J. Greenberg (Ed.), ***Organizational behavior: The state of the science:*** 207–220. Hillsdale, NJ: Erlbaum.

Erez, M. 1996. Rhythms of an academic's life: Crossing cultural borders. In P. J. Frost & M. S. Taylor (Eds.), ***Rhythms of academic life: Personal accounts of careers in academia:*** 19–29. Thousand Oaks, CA: Sage.

Frost, P. J. 1985. Responding to rejection: An author's view of the rejection of an academic manuscript. In L. L. Cummings & P. J. Frost (Eds.), ***Publishing in the organizational sciences:*** 766–773. Homewood, IL: Irwin.

Gordon, R. A., & Howell, J. E. 1959. ***Higher education for business.*** New York: Columbia University Press.

Greiner, L. E. 1979. A recent history of organizational behavior. In S. Kerr (Ed.), ***Organizational behavior:*** 3–14. Columbus, OH: Grid.

Kerr, S. 1995. On the folly of rewarding A, while hoping for B. ***Academy of Management Executive,*** 9(1): 7–14.

Lawler, E. E., Mohrman, A. M., Mohrman, S. A., Ledford, G. E., & Cummings, T. G. 1985. ***Doing research that is useful for theory and practice.*** San Francisco: Jossey-Bass.

Miles, R. E. 1996. Business schools in transition: A brief history of business education. In P. J. Frost & M. S. Taylor (Eds.), ***Rhythms of academic life: Personal accounts of careers in academia:*** 457–458. Thousand Oaks, CA: Sage.

Miner, J. B. 1974. ***The human constraint: The coming shortage of managerial talent.*** Washington, DC: BNA Books.

Miner, J. B. 1993. Pursuing diversity in an increasingly specialized organizational science. In A. G. Bedeian (Ed.), ***Management laureates: A collection of autobiographical essays,*** vol. 2: 283–319. Greenwich, CT: JAI Press.

Miner, J. B. Forthcoming. ***Theories of organizational behavior: Where they came from and where they are going.*** New York: Oxford University Press.

Nord, W. R. 1996. Research/teaching boundaries. In P. J. Frost & M. S. Taylor (Eds.), ***Rhythms of academic life: Personal accounts of careers in academia:*** 83–89. Thousand Oaks, CA: Sage.

Pierson, F. C. 1959. ***The education of American businessmen: A study of university-college programs in business administration.*** New York: McGraw-Hill.

Tannenbaum, R., Margulies, N., & Massarik, F. 1985. ***Human systems development: New perspectives on people and organizations.*** San Francisco: Jossey-Bass.

Tversky, A., & Kahneman, D. 1981. The framing of decisions and the psychology of choice. ***Science,*** 211: 453–458.

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UNLEARNING TO LEARN

JOHN W. SLOCUM, JR.
Editor: 1979–81
Southern Methodist University

Being a journal editor at first brings with it exhilarating feelings of power and of pride in the professional accomplishments that have gotten you appointed to such an elite position in the profession. Unfortunately, this feeling quickly dissipates as the enormity of the daunting task of being an editor becomes a reality. Even though I had the wonderful opportunity to serve as an Editorial Board member for Jack Miner and Larry Cummings and was able to learn how to cogently craft astute reviews, I had little knowledge of printing, advertising, and a myriad of other sundry tasks associated with the editorship. Managing 36 reviewers and their idiosyncratic behaviors, finding ad hoc reviewers to provide expertise in the numerous domains that the board was not competent to handle, and balancing my family life with the demands of the editorship proved to be challenges.

There was much to learn. The unrelenting demands of advertisers and the printer for decisions and deadlines meant a schedule had to be maintained. With the assistance of Barbara Williams (now Barbara Miner), Mary Bowdin, and others, a production schedule was created and maintained in Atlanta. All editorial functions were being performed at Penn State. Judy Satorie, my secretary, became my right hand, acknowledging all authors' manuscripts and creating a posting system that manually tracked manuscripts, reviewers, and copyediting processes. Later, when I moved to Southern Methodist (SMU), Jane Bell became my right-hand person.

The Board of Governors of the Academy averred that advertising monies would pay for the production costs of *AMJ*. There were many heated debates between me and Jim Rosenzweig, editor of *AMR*, and various *Proceedings* editors over the ownership of advertisements placed in the journals. If an advertisement was placed in *AMJ*, the monies from that advertisement were credited to *AMJ*'s account. Therefore, the role of the editor was twofold: to ensure the academic integrity of the publication and to maintain its financial viability.

Dedicating 30–35 hours per week to the *Journal* was personally rewarding and challenging. It was rewarding in that each day, decisions were being made that affected people's professional lives. Eighty-seven percent of all letters I wrote began with the statement "We have received three reviews on your manuscript and it is the learned judgment of the reviewers and myself not to publish your manuscript." Reading 1,187 manuscripts and accepting only 13 percent meant making lots of colleagues unhappy. Realizing the damaging effect of such rejections on their careers troubled me throughout my tenure.

Editors have a lot of discretion, but this discretion is tempered once a review assignment is made. Relying on the judgments of others regarding the academic merits of an author's work presented a personal challenge. Jack Miner believed that Editorial Board members should be able to read manuscripts across all disciplines. Being a member of his board broadened my intellectual capacities in related fields. Larry Cummings's philosophy was to have reviewers read within their field(s) of professional expertise. Following Larry's model was functional for reviewers, but it didn't abate the editor's problem. Since *AMJ* published manuscripts that reflected the interests of all Academy members, there were manuscripts that exceeded my intellectual boundaries, especially in operations management, international management, and strategy. Ferreting out reviewers and Penn State colleagues to whom I could talk about the merits of a manuscript was a daily task. Reading reviews and then making a decision based on this information required empowering others to make decisions and then honoring those decisions. The relinquishing of control was an important lesson in my life. Having learned this lesson—or having unlearned the idea that the editor alone made editorial decisions—helped me when I later became vice president for program and was responsible for the Academy's annual program in New York City.

I was cognizant that both Jack Miner and Larry Cummings were members of the "O" group (e.g., organizational behavior and organizational theory) that had dominated the governing body of the Academy for years. As an active member of these groups and of the Board of Governors, it was my observation that non-"O" divisions had made the dominance of the "O" divisions a central theme at several Board meetings. Early in my editorial tenure, senior colleagues of the business policy division presented an analysis clearly highlighting the dearth of policy manuscripts being published in *AMJ.* A decision was made to publish manuscripts in that field that didn't meet the exacting psychometric standards one could achieve in the "O" fields. As editor, I had to unlearn the view that there was only one "correct" paradigm. At business meetings of the Business Policy Division, I personally assured its members that the editorial policy of *AMJ* would be broad enough to encompass publishing original empirical works that met the standards achievable in their field. Policy scholars were appointed to the Editorial Board, and manuscripts were submitted. Coterminously, Dan Schendel informed me that Wiley publishers had agreed to publish a new journal, *Strategic Management Journal,* and that he would be its first editor. Several members of the *AMJ* Editorial Board resigned to take positions with Dan and his new journal.

During my tenure, it became evident that theory-building and theory-testing manuscripts were being displaced by manuscripts presenting sophisticated statistical analyses of trivial problems. Abe Korman, a good friend and a member of the Editorial Board, reminded me of this fact. *AMJ* had sought to differentiate itself from other prestigious journals, notably the *Journal of Applied Psychology,* by publishing manuscripts that focused on

theory building. The zeitgeist, especially in the Organizational Behavior Division, was to publish manuscripts that demonstrated the methodological penchants of their authors. It was a consistent reminder to reviewers that the vision of *AMJ* was to publish manuscripts that extended theory building.

By 1980, I knew that the Academy needed to start a new journal that would appeal both to the professional practitioner and to teaching members of the Academy. As academic scholars, we were writing to ourselves, and our prose had little impact on the practice of management. Few professional managers subscribed to *AMJ,* and those that did were Ph.D.'s in industrial organization psychology working for *Fortune* 500 organizations. A lack of time and energy precluded me from articulating this vision to more than a few close colleagues. The idea favorably resonated with them but had to wait four years before it could be fully articulated and sold to members of the Board of Governors and the president of the Academy of Management. Even though the vision for a new journal was in an embryonic form, the seeds for the *Academy of Management Executive* had been sown.

On a personal note, I made trade-offs between three competing roles: family, profession, and school. The family suffered because of the extended hours at the office. Even when home, my musing about editorial problems was constant. Authors frequently called about the status of their manuscripts, and I tried to oblige them by working Saturdays and Sundays to respond to their queries. Vacations were postponed during the first two years, not only because of the *Journal,* but also because the family moved from Penn State to Southern Methodist University in Dallas. When Tom Mahoney was appointed as associate editor, time for family events became a reality as part of the workload shifted to Tom. My commitment to the profession heightened because of my involvement as *AMJ* editor in all of the major Academy activities and the members' desire to "meet the editor." Around the time I became editor of the journal, Don Hellriegel and I had just published the second editions of our two management and organizational behavior textbooks. Writing basic college textbooks is an extremely involving project. The third revision of each book was postponed because of the trade-offs. Originating empirical research projects was put on the back burner because of the lack of time and, perhaps more importantly, the lack of the psychological energy to cope with the exigencies of such projects. At both Penn State and SMU, my instructional and service loads were lightened in view of my editorial duties. Colleagues at both institutions sacrificed for my editorship.

Would I do it all again? YES! But not at this stage of my career. The personal growth experiences were stimulating and rewarding. They included learning to be empathetic and a member of a team, leading a team of professionals to accomplish goals, and finally, crafting a vision for a new journal that would eventually be implemented by Kay Bartol, who succeeded me as president of the Academy. Learning to accomplish goals through others will forever be remembered.

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REFLECTIONS UPON A STAGE IN THE MATURATION OF *AMJ* AND THE AOM

THOMAS A. MAHONEY
Editor: 1982–84
Vanderbilt University

It is a difficult challenge to assess what has happened in management since the end of my affiliation with *AMJ.* Although I served as editor during the 1982–84 term, that affiliation began in 1973, when John Miner asked me to serve on the Editorial Board. After apprenticing for 10 years before moving into the editor slot, it is difficult to remember sharp baselines for assessing change. Consulting old issues, I observed that circulation, closely reflecting AOM membership, was 3,700 in 1973. It had increased 90 percent by the start of my term and increased another 7 percent during that term. Circulation has increased another 57 percent since then. Clearly the Academy, as reflected in the circulation of *AMJ,* has grown at a rapid pace over the past 20 some years. I leave it to someone else to compare this increase with the growth of the managerial profession and to make inferences about the growth in influence of management scholars, the largest group of AOM members. I also leave to someone else analysis of the increasing differentiation of the Academy in terms of divisions and interest groups, changes in the membership of these groups, and the implications for changing emphases in research and teaching over the years.

In one sense, *AMJ* characterized and reflected the interests of the Academy from 1958 until 1976, when *AMR* was initiated. Since then, *AMJ* has served primarily as an outlet for empirical research and *AMR* as an outlet for review and theory contributions; together, they reflect the scholarly interests of the AOM. During most of the period of my affiliation with *AMJ,* it thus was reflective of empirical research in management only. *AME* was initiated in 1987, primarily for communication with practicing executives, and I understand that there is consideration of initiating another AOM journal, one concentrating upon the teaching of management.

This brief history of AOM publications suggests to me a maturation of scholarship in the field of management. As is recognized in the divisional structure of the Academy, management is a field for study and practice, not a core discipline in the more traditional sense. The disciplinary roots of members in different divisions are quite varied, although all share interests in the common field of management practice. Interestingly, managerial finance and accounting are not represented in the divisional structure, scholars in those fields presumably finding more in common with their specialized colleagues than with AOM members.

Anyway, initial members of the Academy presumably found more shared interests with others working in the field of management than with those in any of the existing disciplines. Not having a strong disciplinary heritage to guide them, those early members pursued empirical research (often descriptive), learning more about the applied field of management, then relatively unknown as a field for research. As the field matured, there was more basis for conceptual models and theory, and *AMR* evolved. *AMJ* articles also benefited from the guidance of models and theory uniquely developed for the field of management. Still later it was felt that the field of study had matured to the point that practicing executives would benefit from work of the AOM, and *AME* emerged. And, now, interest is shifting to the *work* of AOM members, the improved teaching of this body of knowledge that has been accumulating.

Looking back at my term as editor, several things come to mind. One was the initial reactions to the announcement of my appointment by two colleagues—(1) "Might have known it, *AMJ* is still dominated by micro-OB." and (2) "But you're not qualified! You're not micro-OB." Regardless of what this says about me, *AMJ* was viewed by many at that time as a captive of the micro-OB group of the AOM. Part of this image doubtless reflected the empirical orientation of *AMJ* and the then dominance of empirical methods in OB.

I came to the editorship with no overwhelming sense of mission. *AMJ* was well established, and I felt no need to change any of the basic policies. I viewed *AMJ* as belonging to the membership and existing to serve the membership. Given the then current view of *AMJ* as dominated by micro-OB scholars, I attempted during my term to enlarge the definition of empirical. *AMJ* was to serve all of the divisions, regardless of the dominant empirical research paradigm of any division. In consequence, I was proud to publish more strategy research, case studies, and inductive research. Submissions during the term increased by 10 percent, to 1,403, a number roughly comparable to the number of submissions during the term just ended.

Another recollection relates to the mechanics of the editor's office. Ours was probably the last of the precomputer editorial offices. We worked with paper, lots of it! Bookcase shelves and filing cabinets were jammed with manuscripts, one section for those newly received and awaiting reviewer assignment, another for those under review, another for accepted manuscripts, and still others for the forthcoming issues being assembled. Multiple manual accounting systems were employed to track manuscripts, reviewer workloads and performance, and journal issue progress. How these systems have been simplified with computerization I can imagine with envy.

My experience as editor certainly broadened and enriched my understanding of the range of research topics and methods of research into management. I screened each new manuscript for appropriateness and made a reviewer assignment. This reading familiarized me with both topics and research methods I had not previously examined, a benefit that doubtless

influenced my later scholarly endeavors and attempts to guide the work of doctoral students.

The experience also broadened my range of professional contacts. Through exchanges with both reviewers and submitting authors, I became aware of the research interests and capabilities of both individuals and of academic clusters, such as departments and schools. I came to know what to expect from individuals in a particular cluster. In retrospect, these clusters demonstrate how social research is, in that individual scholars benefit from and contribute to the strengths of their colleagues. A number of these review and submission contacts evolved into continuing contacts that have provided intellectual and personal support in a number of ways over the years. I have been enriched through them.

Still another lesson learned from the experience was the critical role of review in the entire process of teaching. Although it is common to perceive the review process as gatekeeping, I also observed the benefit of review in the development of submitting authors and their works. Every work published in *AMJ* was improved through review and revision prior to eventual publication. The benefit of review was also apparent in the subsequent submissions of prior *AMJ* authors; these later papers were notably better than the earlier ones. There are, doubtless, elements of gatekeeping in the review process, but I came to view it more as collaborative authorship, as a process in which reviewers assisted authors in the improvement of their publications.

Reviewers differed in their interest in and ability to engage in collaborative authorship. The reward of successful collaborative authorship is more work—an increase in the number of revisions to look at and in the number of manuscripts assigned by the editor. In a very real sense, it is too bad that the review process is anonymous and that successful collaborative authorship goes unrecognized by all except the editor.

I was struck some time ago, while reviewing the role of publishing in the social sciences, by the recognition that the publishing of academic articles is perhaps the best example around of supply-side economics. Manuscripts are churned out constantly, their authors motivated by desires to communicate new insights and/or observations about interesting phenomena, their need to publish to achieve tenure and status, and the desire for the recognition that comes through publication. I have even heard colleagues monitoring the number of citations of their works and comparing counts with others to determine a pecking order of recognition. Outlets in the form of journals and edited volumes of essays proliferate in response to the supply of academic manuscripts. Doubtless more and more professionals are, like me, foregoing reading new publications and instead only searching the outlets when in search of a specific topic of interest. The demand for publication has, in my opinion, been outstripped by the increases in supply. Tenure and promotion reviews today typically grade publication outlets in the assessment of productivity. Although I understand this routine, I regret that it has become

impractical to remain abreast of the evolving field of management research and practice by scanning all new publications. Perhaps it is time to consider something like the annual reviews of research published in psychology, sociology, and other disciplines. Annual reviews of scholarship in management might better serve our profession, given the proliferation of research outlets and publications. *AMJ* has done well over the years in maintaining readers' interest through the quality and range of articles offered. I trust that this will continue through future editors.

It would be tempting to pontificate at this stage upon the current and future role of management research, were I up to that. However, I am not. Instead, I am struck by the fun, challenge, and opportunity management research offers. Topics and issues proliferate each year as work organizations, human resources, and management practices change. The opportunities are boundless. At the same time, management scholars are far more competent and qualified to conduct meaningful research than they were 20 years ago. Merging the opportunities and the competencies should produce an exciting next 20 years of research. At the risk of appearing to discourage individual scholars from pursuing their own interests, however, I do think that the field would benefit from some joint efforts to collate and organize what is now known about management and to propose broad research agendas to probe those subjects about which little is known. In any event, whether future *AMJ* reports reflect the influence of some broad agenda or the individualistic inspirations of scholars, *AMJ* has an exciting future ahead. Future editors are to be envied!

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BUILDING ON PAST STRENGTHS WITH INCREMENTAL CHANGE

JANICE M. BEYER
Editor: 1985–87
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In 1984, when I was called by Bob Duncan and asked whether I wanted to become the editor of *AMJ,* I was truly surprised. I had only been on the *AMJ* Editorial Board for three years or so. Also, having earned my Ph.D. only ten years before, I still felt like a rather junior member of the field. I was, of course, very honored to be asked, but was aware of two things that gave me pause. The first was how much work it would be for me to edit the journal. I suspected it would become a full-time job and thus interrupt research projects already underway—in particular, a book on culture I had just begun with Harry Trice (Trice & Beyer, 1993). Second, I realized that I would be the first woman editor of *AMJ* and might therefore be subject to more critical scrutiny than my predecessors. I needed to feel that I was up to that scrutiny. The question for me became whether or not, given these circumstances, I could make a strong enough contribution as editor to justify accepting.

To answer that question, I had to think about where *AMJ* stood as a journal in relation to what was going on in the field, and then decide whether I had the skills and knowledge needed to strengthen *AMJ*'s role in furthering the best management research. There was no question in my mind that *AMJ* already ranked among the top management journals, thanks to the efforts of my predecessors and the increasing quality of the research being done by members of the Academy of Management. Most people I knew ranked *AMJ* second, behind one of the more specialized journals in their areas of interest—the *Administrative Science Quarterly* or the *Journal of Applied Psychology.* It would be very hard to overtake the established positions of those journals, but I judged it was a worthwhile endeavor to maintain a strong second position.

The second assessment I made was to think about whether *AMJ* could play a stronger role in emerging developments within the field. Three stood out for me. The first was the use of new theoretical approaches and methods to address new kinds of questions. In particular, more young scholars were using qualitative methods than in the past, and *AMJ* had not yet published articles using such methods. Since my interest in culture had made me

The author was at the State University of New York at Buffalo when her term as editor began. She is now at the University of Texas at Austin.

sympathetic to qualitative methods, and I had always used them before constructing quantitative measures in my own research, I felt I would be a good person to shape the introduction of these methods in *AMJ*. Second, the field of strategy was burgeoning, but seemed rather weak in both theory and methods. My own training and knowledge of the sociological side of organizational theory could be useful here, but I would need to seek assistance from persons more knowledgeable about economic theory, finance, and so forth. Third, the study of organizational change seemed to be waning, perhaps because convincing field tests of theoretical ideas for managing change were lacking. I had done a large-scale, quantitative field study on implementing change (Beyer & Trice, 1978) and felt well versed in theories of innovation and change and in the difficulties of studying change in an empirically rigorous way.

Overall, I judged research in management as becoming more rigorous, more theoretically oriented, and more diverse than in the past. I felt the field was moving in good directions. Consequently, I saw no great need to act as a reformer or intervene in ongoing positive developments. What seemed appropriate to me was reinforcement of some of these trends and a general nurturance of serious efforts—the carrot rather than the stick approach to continued improvement.

My assessments, particularly of my own suitability for the challenges ahead, may have been self-serving. They may have been dead wrong (although I still don't think so). Anyhow, they helped me to feel I could make a positive contribution as editor, and after a couple weeks of such ruminations and some negotiating with Dean Joe Alutto for practical assistance, I accepted.

In my initial editorial as editor, I confessed to having the ambition, which I suspected all new editors of scientific journals shared, of improving the *Journal* (Beyer, 1984). I assured readers I wanted to make incremental improvements to what I felt was already a strong journal. I became more determined to make a noticeable difference when, shortly before assuming the editorship, I was challenged by someone sitting at a luncheon table with me and a group of colleagues at one of the regional Academy meetings. This person said, "Janice, admit it. You can't hope to make *AMJ* as good as *ASQ*. Everyone knows that *ASQ* is the best journal in the field." As on other occasions when persons have challenged me so impolitely and unpleasantly, I found myself putting into words thoughts that had been only half-formed in my mind until that point. I replied something like this: "I don't see why *AMJ* can't be the best journal in the field. We have the circulation. *AMJ* goes to every member of the Academy of Management and *ASQ* does not. Anyone who publishes an article in *AMJ* has the potential readership of the whole Academy. We should be able to attract the best papers." I also knew by then that *AMJ* received far more new submissions (about 450 a year) than *ASQ*.

In a sense, answering that remark clarified for me my ultimate goal and my overall strategy: to attract the best papers in the field by taking advantage

of *AMJ*'s circulation and any other competitive advantages it currently had or I could develop. Many of the policies I implemented as editor reflected this overall strategy and were designed to advance that goal. For I knew that the key to improving a journal was to attract higher-quality submissions. My second goal was to improve the papers that were accepted through the review and editorial processes. My third goal—more a hope than a goal—was to improve the general quality of the research and the reporting of research being done in the Academy by providing some outstanding and clear exemplars among the articles *AMJ* published. These were not revolutionary goals; I'm sure most of my predecessors shared them to various degrees. But making them explicit was a good way for me to think about what I wanted to do as editor and what I wanted to avoid doing.

In devising policies and practices that would help to realize these goals, I relied on my close observations of two editors of *ASQ*, Tom Lodahl and Karl Weick, and on my extensive experience as both a reviewer and author. I reflected at some length on what I had observed and on how I had felt in these roles. At the same time, I did not intend to try to make *AMJ* a clone of *ASQ*. I was not an uncritical admirer of everything about *ASQ*, was aware of what I saw as some weaknesses, and felt I could do better in some respects. In particular, I did not want to create such an elitist envelope around *AMJ* as I perceived had come to surround *ASQ* in many people's minds. I was very conscious of the fact that *AMJ* was the journal of a professional society and, as such, should serve the general membership of that society.

There were various ways that I decided we could improve our chances of attracting the best papers. One way, I was convinced, was to have fast turnaround times. If authors knew that they would get a decision in a shorter time from *AMJ* than from other journals, they might be more likely to try us first. *AMJ* already had a competitive advantage here because it had a good reputation in this respect, and all I had to do was to maintain it. The means to this end seemed to be communicating strict expectations to my reviewers, following up quickly and uniformly on late reviews, choosing Editorial Board members who were not already overburdened with other obligations and who gave evidence, in trial reviews, that they would be prompt, and being prompt myself in making decisions and handling correspondence as soon as reviews were completed.

A second way was to provide genuinely constructive and appreciative reviews. If authors thought their research would be read and evaluated sympathetically by well-qualified reviewers and that, even if they were rejected, submitting to us would provide them with helpful comments that would be useful in revising their papers for submission elsewhere, they might be more likely to submit to us first. The main ways I furthered this aim were by being very careful about whom I invited to join the Editorial Board and by my exhortations at board meetings. I tried out most of my board members as ad hoc reviewers on two or more submissions and based my choices of whom to invite on the quality of the reviews they provided. Throughout my editorship, I made it a practice to grade every review I read as well as to keep

track of the promptness of the review. Those reviewers whose reviews did not meet my standards were not used again. I also asked my new board members, at our first meeting, to be appreciative and to avoid destructive comments. Once in a while, when some cutting comments crept into a review, I returned it for a rewrite or, if the barbed comment was brief, I simply applied "whiteout" before sending the review on to the authors.

A third way was to make the *Journal* more attractive to read. If prospective authors thought their papers would be more likely to actually be read in *AMJ* than elsewhere, they would want to be published there. Consonant with my goal of serving the entire Academy membership, I wanted any member of the Academy to be able to read any article in *AMJ* and not only understand it, but find it interesting. To realize this aim I did a variety of things: (1) I found and trained a new copy editor to help make papers more readable. My choice, Seph Weene (now Seph Doliner) is still with the *Journal,* and I am pleased with and proud of the choice I made way back then. (2) Another way I felt *AMJ* could be made more readable was to see that the papers published had been informed by and were relevant to more than a small subgroup of researchers. To this end, I made it a practice to assign reviewers from more than one subfield in the Academy to evaluate each article. At the same time, to help to assure that the articles were well grounded in their particular subfields, I appointed and used three consulting editors to help me reach decisions in the subfields that generated the most submissions and in which I lacked a strong background: Rick Mowday for organizational behavior, Manny London for human resources, and Carl Zeithaml for strategy. (3) I also required authors to define specialized terms and provide clarifying references, a practice that greatly annoyed a few authors. I remember one telling me, "The people I want to read my article will understand what I mean." This elitist comment did not work with me. Seph was a great help here, for she also insisted on clear, explicit writing. If she couldn't understand what the authors meant, she asked them questions to clarify the issue. (4) Because many Academy members value the application of research, I also required authors to include a discussion of the practical implications of their results before I accepted their papers. (5) I changed the cover, format, typefaces, and many aspects of the style in ways that I hoped would make the *Journal* more physically attractive and useful. (6) I also inaugurated the practice of having a subject index in the last issue of every volume to make it easy for researchers to find relevant articles and thus make the *Journal* more useful to readers. These and other editorial policies I consciously followed have been discussed in somewhat more detail elsewhere (Beyer, 1996).

The final carrot I devised to attract the best articles was a proposal to the Board of Governors that all of the Academy journals begin a policy of selecting the best paper of the year and presenting awards for these papers during the annual Academy meeting. Again my experience provided the idea. Harry and I had won such an award from the *Journal of Alcohol Studies.* When this proposal was accepted and implemented, I felt we had added another competitive advantage. Other journal editors apparently agree, be-

cause they have since developed variants of these awards to counter that advantage.

Improving the manuscripts we decided to publish was a two-step process. First, we had to provide constructive, high-quality reviews and clear comments from the editors that would help authors to develop their ideas and present their findings convincingly. This required consistently generous reviewers—well-informed and discriminating researchers who saw both the strengths and weaknesses in others' research and were willing and able to try to help authors realize their ideas, rather than impose their own. Second, because I was convinced that empirical research was more meaningful and interesting if grounded in strong theory, I asked members of the Editorial Board to be sensitive to possible theoretical contributions and to help authors to strengthen their theoretical discussions when possible. At the same time, I emphasized that, since *AMJ* was an empirical journal, the main criterion for acceptance should be the quality of the data presented. Papers with strong data but lacking significant new theoretical insights could be published as research notes. But papers with strong theory and weak data would not be accepted. Finally, as already mentioned, once papers were accepted, we endeavored to copyedit manuscripts to make the writing style clear and direct.

Providing exemplars was implicit in attracting the best manuscripts and improving them further, but it seemed especially important for previously neglected types of research. As already mentioned, one growing type of research not yet represented in the *Journal* was qualitative research. To facilitate its acceptance within the field, I wanted to provide exemplars of excellent qualitative research presented in a way that would reveal the strengths of this methodology and could be imitated by others. In this way, I hoped to increase the legitimacy of these methods, perhaps encourage more fledgling scholars to learn and use them, and help everyone else to better understand their value. I was pleased when qualitative papers were submitted and gratified to publish several that made innovative and important contributions. A second way I could provide exemplars was to publish some well-designed and -executed field experiments testing the effects of designed change programs. To me such research is, in some ways, the ultimate test of our skills as applied researchers, and I felt that few researchers would venture to try this type of research, with all of its difficulties, if no field studies were ever published because they were not as perfectly controlled as experiments done in the laboratory. So I was inclined, when I received some submissions of carefully designed and executed field experiments, to publish the best of them despite some unavoidable flaws. I felt that asking the authors to deal with the flaws by discussing their likely effects on the results was much more informative to the field than not publishing these studies. Finally, I aspired to provide exemplars of the best research being done in all of the subfields in the Academy so as to inform Academy members of the range of research being done. I tried sending signals through my initial editorial and public statements and through the range of people I chose to

join the Editorial Board that I would follow an inclusive policy in my decisions on what to publish. But I could not publish what was not submitted, and thus I was able to make only limited progress in fulfilling this aspiration.

Others must judge whether and to what degree I was successful in realizing my other aims as editor of *AMJ*. The results of a subsequent empirical study I carried out with two co-authors (Beyer, Chanove, & Fox, 1995) that analyzed the actual content of reviews and papers relative to decisions to accept or reject during the period of my editorship were reassuring. Results indicated that some of the usual criticisms of the review process did not predict which articles were accepted or rejected. Rather, the data seemed to show the effects of my concern with improving the papers submitted. The best prediction of eventual acceptance turned out to be what we called selective amplification—a combination of gatekeeping (selection) and coaching (amplification) by reviewers and editors.

It was a great privilege and pleasure to be the editor of *AMJ*. I worked with wonderful people, and I felt extremely fortunate in the support they gave me and in the good will, intelligence, and responsiveness of most authors and reviewers. Although I wouldn't do it again, I'm glad I finally said yes. Editing *AMJ* provided me with many satisfying and deeply gratifying experiences.

REFERENCES

Beyer, J. M. 1984. From the editor. ***Academy of Management Journal,*** 28: 5–8.

Beyer, J. M. 1996. Becoming a journal editor. In P. J. Frost & S. Taylor (Eds.), ***Rhythms of academic life: Personal accounts of careers in academia:*** 287–297. Thousand Oaks, CA: Sage.

Beyer, J. M., Chanove, R. G., & Fox, W. B. 1995. The review process and the fates of manuscripts submitted to *AMJ*. ***Academy of Management Journal,*** 38: 1219–1260.

Beyer, J. M., & Trice, H. M. 1978. ***Implementing change: Alcoholism policies in work organizations.*** New York: Free Press.

Trice, H. M., & Beyer, J. M. 1993. ***The cultures of work organizations.*** Englewood Cliffs, NJ: Prentice-Hall.

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THE JOURNAL EDITOR AS WELL-INTENTIONED STEWARD

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Editor: 1988–90
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Lord, give me chastity, but not yet.
St. Augustine

Sometimes my feelings about wisdom are similar to St. Augustine's ambivalence as a young man toward chastity, especially when it comes to reflecting on my term as editor of *AMJ*. I suppose all of us secretly aspire to be wise, because with wisdom comes insight, knowledge, and understanding. But wisdom can be a two-edged sword. In the highly unlikely event that I ever achieve true wisdom, I fear that I could look back over my term as editor with far greater clarity, revealing both mistakes that were made and opportunities that were lost. Some things are better not to know.

For that reason, I do not claim to possess great personal wisdom about the journal publication process. With that as a warning to the reader, let me offer several reflections on my term as editor of *AMJ*. Having already published one such statement (Mowday, 1993), I'll try to focus my comments here on somewhat different topics, including my preparation for the job, some of the changes that I introduced, how I addressed some of the dilemmas inherent in the job, and some unfinished agenda items.

BECOMING THE EDITOR

In the context of serving as the president of the Academy of Management (Mowday, 1997), I've noted that one key to survival, if not success, lies in the careful selection of a predecessor and successor. If you play your cards right, you can bask in the reflected accomplishments of the person you follow and trust to the person who succeeds to clean up any messes you left. The same advice holds for editing a journal like *AMJ*, although I might expand it to include surrounding yourself with superior colleagues, such as the capable editors of other Academy journals, talented consulting editors, and conscientious Editorial Board members who surrounded me. The latter two groups are especially important because they make you look good (of course, weak editors at the other Academy journals can also make you look good in comparison, but that wasn't in the cards for me).

I was truly fortunate to have followed Janice Beyer as editor. Not only was I handed a journal that was in excellent shape, I was able to learn the craft of editing at the feet of a master. I was the first editor to assume the position after having served a three-year term as consulting editor. Having consulting editors was one of Jan's innovations. I was told at the time I was offered the job that being a consulting editor was likely to prohibit me from becoming the editor. I'm not aware that this was my motivation for accepting, although it may have a subconscious one. Being a consulting editor provided an opportunity to work very closely with Jan and to see the journal submission and review process from a close perspective not possible while serving on the Editorial Board. More importantly, Jan was a gentle but persistent teacher (you'll have to ask Jan whether or not I was a good student). I learned a great deal from her about seeing value in manuscripts on topics outside of my own area of expertise and in papers whose authors seemed determined to hide their contribution. I also learned from watching Jan work with authors to help them communicate their ideas. On more than one occasion when I was slow to recognize the value in a manuscript, Jan worked patiently with me to open my eyes and expand my thinking. I don't think I ever became quite as good at this as Jan, but I was much better than I would have been without the experience as consulting editor.

I was also very fortunate to become editor of *AMJ* at the same time David Whetten was assuming the editorship of *AMR*. We formed a close working relationship, in part because we were both in over our heads (at least I was) and didn't know where else to turn. From the outset, we were able to cooperate on our appointments to the Editorial Boards of the journals and to work together in shaping the editorial policies we would each implement. Dave was a wonderful source of advice and counsel. My consulting editors, Michael Hitt, Claudia Schoonhoven, and John Fossum, were equally valuable in providing wise advice.

Some might argue that, having served as a consulting editor, I should have known better about taking the editorship. Being consulting editor was hard work, made more difficult, as I recall, by my (at various points) simultaneously teaching, serving as a department head, and being the academic director of Oregon's executive M.B.A. program. Unlike the Editorial Board members, who could expect an average of 2 manuscripts a month, the flow coming to me was considerably higher (I counted one year but stopped at 100 manuscripts because it became too depressing). Because I strongly supported Jan's goal of providing authors with a quick turnaround of their manuscripts, I tried to return the manuscripts I received from her the next day. I'm sure I didn't achieve this goal in all or even in most cases, but it kept me focused. If ever a person assumed the editorship of *AMJ* with his or her eyes open about the nature of the workload, I felt that I did.

Because Jan had done such an excellent job editing the journal, when I became editor I saw myself more as a steward than as a change agent (hence the title of this piece). It is sometimes tempting, when entering a role like that of journal editor, to think about putting your personal mark on the

journal by introducing major changes. In truth, I didn't believe that much needed to be changed. Moreover, I saw value for the journal in continuity. Jan had changed the typeface and had given the journal a new look during her term (the previous cover design had been in place for almost 20 years). It seemed important that these changes continue for a while, although for reasons I'll explain below, their duration was ultimately shorter than I initially anticipated. My overall orientation, though, was to manage the journal effectively and to continue publishing high-quality research that would reflect well on the journal and on the Academy of Management (i.e., not drop the ball).

I continued many of Jan's practices, including trying to provide authors with timely, supportive feedback and attempting to make decisions after the first revision. In addition, I kept the copy editor Jan had trained because, like her, I thought improving the clarity with which authors expressed their ideas was an important goal (not all authors agreed, though). I was also fortunate to retain the people Jan had recruited and trained to be production editor and subject indexer.

The changes I introduced, with possibly one exception, might be characterized as tinkering at the margins. I introduced a policy of having short abstracts for research notes to make their content more accessible to readers. In addition, during my term we switched printers. At the time I was horrified by the thought, although it allowed us to achieve cost savings and to provide authors with page proofs instead of galleys. For the first time, authors could see exactly how their articles would appear in print in advance of publication. Finally, I initiated the practice of annually publishing the Academy's Code of Ethics, because it seemed like the right thing to do.

There was one change that I had not anticipated when I assumed the editorship. As I indicated, my goal was to have continuity in the appearance of the journal by continuing Jan's cover design. However, Jack Young at *AME* was working with a designer to improve the look of his journal. It occurred to Jack, Dave Whetten, and me that the Academy's three journals were all very different in appearance and trim size. If you looked at the three journals side-by-side, there was little to let you know that they all were published by the same organization. In addition, the style guidelines for each journal differed.

We worked to introduce shared design elements to the three journals so that they would have a "corporate identity"—including a common color for particular issues (green for March, etc.), an innovation that didn't last very long—and a common trim size for *AMR* and *AMJ*. We designed new covers for the three journals, which had the unintended consequence that Jan's wonderful design was short-lived. In addition, I worked with Lee Meiser at *AMR* to come up with a common style guide for both journals (the needs of *AME* were so unique that Dave and I did not attempt to coordinate with them on style or trim size). We believed that it would be easier for authors to contend with only one style guide than to have to prepare papers in two different ways depending on whether it was an *AMJ* or *AMR* submission. By

the time I stepped down as editor, *AMJ* and *AMR* had adopted a common style guide. The new cover design for the journal made its first appearance under the next editor, Mike Hitt.

EDITORIAL DILEMMAS

All who assume the role of *AMJ* editor face similar dilemmas, although I'm not sure everyone resolves them in the same way. How one resolves these dilemmas, however, fundamentally influences his or her approach to the editorship and the direction of the journal. The first dilemma focuses on the primary goal of the journal. Is the primary purpose of publishing *AMJ* to advance science and knowledge about management or to serve the needs of the Academy's members? If it's the latter, the imperative is to publish as much as you possibly can, because that serves the career needs of more Academy members. At the extreme, one might argue that member needs would be best served if the editor published everything received—although the four issues a year that I was allotted posed obvious limits. If one believes that the primary goal of the journal is to advance knowledge, however, only papers that meet very high standards of quality and scientific merit should appear. An editor wants to be sure that whatever gets published in *AMJ* makes a clearly recognizable and significant contribution to knowledge. Moreover, maintaining high standards for quality enhances the reputation of both the journal and the (relatively fewer) authors who have their papers published.

Although some may question my judgment, I pursued the goal, initiated by Jan Beyer, of publishing fewer, higher-quality papers. The number of pages in each volume of *AMJ* under my editorship was about the same as under some previous editors, although the number of articles was lower. As an interesting point of comparison, John Miner published 226 articles in 2,746 pages, and I published 127 articles in only slightly more pages (2,840). Clearly, articles and research notes tended to be longer, thus providing authors with the opportunity to provide more comprehensive and detailed descriptions of their research. The Board of Governors later decided to increase the annual number of *AMJ* issues from four to six. At the time, I wasn't convinced this was a good idea, as I wondered if thinning the soup might threaten the journal's reputation for high quality, not to mention it's making the editor's job incredibly more difficult. In retrospect, I may have been wrong about the first point, because the journal continues to enjoy the same very high reputation for quality with six issues as it did with four. I was dead right about the editor's workload, though.

A second dilemma that confronts each editor has its origins in the heterogeneity and diversity of the Academy. With over 20 divisions and interest groups, we are a very diverse group. Member interests range from production management to corporate social responsibility and include just about everything in between. There is a strong pressure on editors to assemble an edi-

torial review boards and publish articles that reflect the diversity of our membership. However, the flow and quality of submissions is not even across the divisions of the Academy. Should the Editorial Board be composed of people representing each of the Academy's divisions and interest groups, thus signaling the willingness of the journal to publish work from all areas? Should the papers published somehow proportionately reflect the divisional interests of the Academy's members? Alternatively, should the board be composed in a way that reflects the flow of submissions received, and should work from all areas be held up to the same standards for quality, letting the chips fall where they may?

I vividly recall being beaten up at the business meetings of some of the smaller divisions because I did not have Editorial Board members reflecting their particular areas of interest and was publishing few of their papers (in large part because few were submitted). Their argument, which was not without merit, was that having no one on the board from their particular areas signaled that the journal wasn't open to submissions on these topics. In my defense, I was concerned that appointing board members in areas in which the manuscript flow was low meant that some board members would have little to do while others would have much. In other words, the workload would be inequitable.

I decided to base the composition of my Editorial Board on the actual flow of manuscripts instead of the divisional structure of the Academy. If the flow of manuscripts in an underrepresented area increased, I was more than willing to appoint additional board members. My stance was, "Show me the manuscripts and I'll give you the board seats." I also decided that we shouldn't have different standards for quality for different divisional interests. This did not mean, as some may have thought at the time, that we were not open to diverse topics or to a variety of research methods. We did insist that topics have broad appeal to Academy members (i.e., not be overly technical or specialized) and that the methods used in a study be appropriate to answering the questions being asked. This mandate may have left some of the smaller divisions in the Academy feeling disenfranchised with respect to *AMJ*. However, I also learned that some of the same divisions who yelled the loudest were not submitting their best work to *AMJ*. They had other, specialized journals in which to publish their work that were much more prominent and prestigious. Thus, often what they sent to *AMJ* were lower-quality papers that had been rejected elsewhere. Typically, *AMJ* also rejected these papers.

A final dilemma editors face is how strong a hand to take in guiding the selection of manuscripts. One model has the editor taking considerable latitude in encouraging and publishing manuscripts, even if the assigned reviewers believe them to have little merit. The other model is to allow the reviewers and consulting editors to guide the decision. Under this model, the editor is more of a referee or scorekeeper, tallying everyone's votes to determine which letter to send. I generally followed the advice of my consulting editors and reviewers, mindful of the fact that frequently overturning

their recommendations would not enhance their motivation. Moreover, the quality of the people I had on the Editorial Board and serving as consulting editors made it difficult to ignore their advice. In addition, I recognized my own limitations in making reasoned judgments about the quality of manuscripts outside my own field.

On several occasions, however, I strayed from the faith by publishing manuscripts in which others found few redeeming features. In general, these instances involved studies examining interesting questions that might stimulate new areas of research and studies that questioned conventional wisdom or used novel methodological approaches. They were often submitted by young scholars or by colleagues from outside North America. Whether or not I did the right thing by encouraging and publishing these papers is anyone's guess. Even though there were only a few, I must admit that publishing them made the job a bit more fun at times.

AN UNFINISHED AGENDA

Under Jan Beyer's editorship, considerable emphasis was placed on trying to increase the innovativeness and diversity of the topics and research methods represented by the articles published in *AMJ*. The journal had always had a strong reputation for publishing rigorous theory-based research, although many submissions during my term were characterized by cutting finer and finer theoretical hairs or offering new, more sophisticated statistical twists on questions that had already been extensively investigated. While I was editor, I think it's fair to say that *Administrative Science Quarterly* was the journal of choice if an author had a paper on a truly innovative topic and/or was using qualitative methods. Like Jan, I wanted authors to also think of *AMJ* as a leading outlet for such work and to be perhaps enticed by the promise of a quick editorial decision. Several of my appointments to the Editorial Board were also intended to signal an openness to innovative research. Looking back, I think *AMJ* had some success in attracting papers that were pathbreaking and that used diverse methodologies. I wish we had been more successful in this effort, however.

Another area in which I had hoped to make more progress was in publishing the work of researchers from outside North America. This goal seemed appropriate, as the Academy was attracting more international members. Moreover, exposing American researchers to the work being done in other countries seemed a worthwhile goal. Unfortunately, we didn't receive many submissions from international researchers, and the ones we did receive were often a tough sell with the Editorial Board. Not only did authors have a difficult time expressing their ideas in the second language of English—they also came from research traditions very different from those we North Americans were used to. My consulting editors and I devoted considerable effort to working with several non–North American authors to help

them shape their submissions. My goal of trying to publish more papers from such researchers was only partially achieved, though.

Finally, a recurring issue that I struggled with was the relevance of what was being published in the journal for management practice. Like Jan Beyer, I made it a point to ask authors to discuss the practical implications of their research, although for many papers this resulted in a dramatic shift in their texts (i.e., from nonfiction to fiction). But during my term as editor, academic journals were coming under increasing criticism for a lack of relevance. Although not as evident then as it is now to some, management practice was moving rapidly ahead of what business school faculty members were researching and teaching (cf. Moore, 1997). The questions we were studying didn't always address the important challenges that managers faced in an increasingly competitive global environment. Some argue that this is still true today, although I note with some pleasure that articles recently published in *AMJ* are cited in the business press more often than they were formerly. This is primarily due to the efforts of the Academy's public relations firm, Hurley and Haimowitz, hired during Mike Hitt's term as editor. Their job is to translate research published in the Academy's journals into language understood by laymen and then to interest business journalists in the work. They've had some success having research done by Academy members discussed in such publications as *Business Week,* the *New York Times,* the *Wall Street Journal,* and the *Economist.* Almost without exception, the research that is gaining public attention comes out of *AMJ* instead of *AMR* or *AME.* I think this reflects the fact that some of the empirical research being published in the journal has greater relevance than some grant it (cf. Armstrong, 1992). Maybe academic journals deserve to be criticized by the popular business press, but not so much for lack of relevance as for the inability to communicate in ways that can be understood by normal intelligent adults.

SUMMING UP

Being asked to become the editor of *AMJ* was perhaps one of the greatest honors of my career. It was also among the most interesting, challenging, and demanding tasks I've ever undertaken. Although I enjoyed what I was doing and the people I was working with, I knew it was time to move on at the end of my three years (actually, I enjoyed a ten-year association with the journal, if you count Editorial Board membership and service as a consulting editor). But walking away from a job that has consumed so much of your time and energy over a period of years is never easy. Stepping down from the journal was made far easier by the fact that I helped to recruit a new editor who was more talented and insightful than I was. Whatever concerns I might have had about ending my involvement with *AMJ* evaporated when Mike Hitt agreed to replace me as editor. Not only did I believe he would do a better job—he

seemed like a nice guy who would quietly clean up any messes that I'd left. And I'm relieved to say that he did.

REFERENCES

Armstrong, M. 1992. ***Imposters in the temple.*** New York: Simon & Shuster.

Moore, T. E. 1997. The corporate university: Transforming management education. ***Accounting Horizons,*** 11: 77–85.

Mowday, R. T. 1993. Reflections on editing *AMJ*. ***Journal of Management Inquiry,*** 2: 103–109.

Mowday, R. T. 1997. Presidential address: Reaffirming our scholarly values. ***Academy of Management Review,*** 22: 335–345.

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THE MATURATION OF THE *ACADEMY OF MANAGEMENT JOURNAL*

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Editor: 1991–93
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When I became editor of the *Academy of Management Journal* in January 1991, it was a maturing journal with strong scholarly respect and prestige. The positive reputation that it enjoyed was largely due to the work of previous editors, and I believe the two editors immediately preceding me, Jan Beyer and Rick Mowday, added considerably to the maturation of the journal.

My goals as editor were (1) to maintain the high standards for work published in the journal that had been established under previous editors (in other words, my goal was to publish quality research in all of the subdisciplines of management, (2) provide excellent and developmental feedback to authors, (3) provide feedback in a timely fashion on manuscripts submitted, and (4) try to develop articles. Thus, I tried to maintain an open mind and take even high-risk manuscripts and work with the authors, to the extent possible, to develop the papers into high-quality, publishable pieces. Because of this last goal, the acceptance rate during my term as editor was slightly higher than it had been in previous times. However, I think the authors would state that they found the process to be challenging. I hope they would say that it was effective and fair as well. I had other secondary but nonetheless important objectives. Among those was the hope of encouraging more research based on data and/or by scholars from outside of North America to be submitted and published in *AMJ*. I also was interested in continuing the tradition established by editors before me of encouraging both qualitative and quantitative (positivist) research.

During my term as editor, I observed a number of continuing changes in the field. For example, I observed that the quality of research was continuing to increase; this phenomenon, an aspect of the maturation of the journal mentioned earlier, was probably partly the result of better research methods training and the entry into the field of a number of young, well-trained scholars. I observed and attempted to emphasize concerns about the psychometric properties of measures among scholars focused on macro-organizational issues (e.g., strategic management, organization theory). In fact, I observed that the quality of the research designs and methodologies used continued to improve during my time as editor. These improvements occurred in both micro- and macroresearch but were probably more noticeable in macroresearch because macroresearchers had not placed as much empha-

sis on methodology as had the microresearchers in prior years. The continued development of high-quality research designs and methods paralleled the growth and development of the Research Methods Division of the Academy of Management. This division was relatively new when I first took over the editorship, but it was popular and, through good leadership and an active membership, provided strong support to researchers through papers, symposia, and workshops presented at the national and regional meetings of the Academy of Management as well as through its electronic network. In fact, the Research Methods Division's support for quality methodology continues today through its sponsorship of a new journal, *Organizational Research Methods,* published by Sage. To provide support for this continuing development and place emphasis on its importance, we published the Special Research Forum on Methodological Issues in Management Research in the December 1993 issue of the *Academy of Management Journal.* This issue was edited by Jean Bartunek, Phil Bobko, and N. Venkatraman. They did an excellent job and selected some quite interesting and innovative pieces on both qualitative and quantitative methodologies. I have observed a number of citations in recent management research to articles published in this special research forum.

I also observed a trend toward the integration of theory across subdisciplines and the applications of methods developed in one subdiscipline to other subdisciplines in management. Such integration was exemplified in the Special Research Forum on Configurational Approaches to Organization edited by Alan Meyer, Anne Tsui, and Bob Hinings and also published in the December 1993 issue of *AMJ.* In fact, I observed a general improvement in theory and a continuing development of new integrated theoretical paradigms during my term as editor. Interestingly, although our microresearchers were better methodologists, overall, I observed that the macroresearchers seemed to build stronger theoretical cases for their research. Of course, part of the continuing development of theory was derived from the integration of theoretical perspectives from different subdisciplines (e.g., integration of transaction cost economics, the resource-based view of the firm, and organizational learning). *AMJ* is an empirical journal and only publishes empirical research, but articles published in the journal must show strong theoretical grounding and make a theoretical contribution. Therefore, not only must the methodology be sound; the theoretical rationale underlying the primary research questions and hypotheses must also be logical and present a unique contribution.

On the basis of the continuing development of new and more sophisticated research methodologies (and statistical tools such as structural equations modeling, simultaneous equations estimation, multidimensional scaling, and Poisson regression analysis) and the continuing integration, development, and use of new, unique, and more accurate theoretical paradigms, I concluded that research in the field of management had, indeed, improved. In fact, I was impressed with the general quality of the research being conducted. Certainly, not all of the manuscripts received at *AMJ* were of this

quality, and there was a need for continuing development of better research methodologies and theories. Thus, I believe that some of the criticism received, both from colleagues and from outside the field, regarding the quality and contributions of management research was unwarranted.

Related to this criticism, I observed a continuing and sometimes intense debate on the relative importance of research on management and the practice of management and the seeming conflict between the two. Personally, I believe that the two are and should be complementary and not conflictual. There were a few occasions during my term as editor in which I was introduced and/or asked to make a presentation to an audience composed partially or wholly of managers and executives. On some of these occasions, having been introduced as the editor of a scholarly journal, I was asked rather pointed questions about the quality of research being conducted in the management field and challenging its importance. After the first time this occurred, I was better prepared to respond. My response was something like the following: In industry, most applied research comes from ideas that had their genesis in basic research. In fact, probably the most valuable innovations and new products are developed through basic research. I believe the same is true for understanding the intricacies and complexities of managing organizations. Perhaps more importantly, a number of faddish ideas have been sold by management consultants and used in practicing organizations. Although some of these ideas may have been effective, a number of them have not been successful in practice over time. This is largely because these ideas have not been tested in research. When I go to a physician, and she or he attempts to diagnose a medical problem and prescribe a means of correcting that problem, I would prefer to know that this medicine or therapy has been tested in research and that results published in the *New England Journal of Medicine* show that this medicine or therapy has proven successful. I believe the same approach should be taken with new management ideas. I would hope that new management ideas are tested by management scholars and this research is published in journals such as the *Academy of Management Journal.* Then, the valuable lessons from this research need to be translated for managers, to the extent that they are ready for practice. Of course, one of the reasons for the *Academy of Management Executive* is to translate management research for practitioners.

During my term as editor, the public relations firm hired by the Academy of Management began gaining publicity for the research being published in *AMJ.* I note that this trend continues today and that research published in the journal is gaining continuing visibility and interest through citations in such popular business press publications as *Fortune,* the *Wall Street Journal, Business Week,* and the *Economist.* I believe that such interest testifies to the quality of management research being conducted and to its value for managers and executives in both public and private organizations. I expect this trend to continue to build in future years.

During my term as editor, the number of manuscripts submitted to *AMJ* for publication consideration increased each year. The average annual num-

ber of submissions during my editorship was over 500, with over 571 new manuscripts submitted during 1993. With revisions, we handled a total of 773 manuscript submissions in 1993. During my editorship, two other important actions were taken with regard to the publication of *AMJ*. First, we increased the number of issues published by 50 percent, from four to six. This was a highly important action that received strong support from the Board of Governors, because it allowed the publication of more high-quality research and reduced the amount of time between the acceptance of an article and its publication. Although the Board supported increasing the number of issues, the debate prior to taking the action centered on the nontrivial cost increases this action would generate. The majority of the journal's publication costs are for production (e.g., copyediting, printing, binding) and mailing to subscribers. Even with some economies of scale, an increase of 50 percent in the number of issues would substantially increase costs. Still, the Board felt that to maintain *AMJ*'s competitive position and preeminent status as publisher of the best empirical management research, this action was warranted—that the benefits outweighed the costs. The increased number of issues allowed the second important action.

The second change in *AMJ* was the introduction of special research forums. I had several goals for these forums. First, a special research forum allows the publication of a group of articles focused on an important topic. It was my view that the emphasis on and visibility of research on particular topics that the forums would provide would attract more and different readers to *AMJ*. A second goal that I had for the special research forums was to attract new and different manuscripts. In other words, I was thinking competitively about attracting research that might be submitted to other top-quality scholarly journals publishing management research. For example, while I was editor, the *Administrative Science Quarterly* had a reputation for being "the" journal in which to publish organizational ecology research. Recently, a special research forum on organizational ecology appeared in the *Academy of Management Journal* (during the term of the editor who followed me). Thus, my overall goal with the special research forums was to obtain a competitive advantage over other top scholarly journals. No journal can publish better work than it receives in initial submissions. Thus, hopefully, both *AMJ*'s regular issues and special research forums and its high-quality and timely reviews will continue to attract top-quality scholarly research in management, research that is submitted to *AMJ* before it is offered to other journals. *AMJ* will thus retain its position as the number one publisher of top scholarly research in management.

I believe the increased number of issues and introduction of special research forums were important for the continued success of *AMJ*, but they presented special challenges for an editor. Both increased the demands on my time as *AMJ*'s general manager. Publishing more issues placed pressure on the production process, requiring more rapid turnaround during copyediting and quicker communication with the authors, and more critical decisions needed to be made on the content of more issues. Introduction of the

special research forums required selecting their topics and co-editors, developing and publishing forum announcements, and managing the flow of manuscripts. I estimate that I spent 70–80 hours per week on journal-related activities, assigning reviewers, reading manuscripts and reviews and making decisions, and managing the overall process (e.g., checking on reviewers and overseeing production and publication). Although these actions had their costs for the editor and the journal's staff, I believe they largely accomplished their purposes. The time from article acceptance to publication was reduced to between six and eight months initially (but lengthened to nine to ten months with the addition of the special research forums). Furthermore, the approximately 20 percent increase in manuscript submissions during my last year as editor suggests a heightened competitive advantage vis-à-vis other major journals (e.g., authors choosing to submit their manuscripts to *AMJ* rather than to other journals, such as *Administrative Science Quarterly,* the *Strategic Management Journal,* and the *Journal of Applied Psychology*). These changes also coincided with the continued development of management research.

I expect management research to continue its development and maturation. In fact, the pace of change in our field will mirror the pace of change in the business environment. I expect the continued and rapid development of new statistical tools and new research methodologies. Researchers will continue to develop new qualitative methodologies, and I expect such development to intensify; the use of large-sample, case-based approaches where new technology provides easier access to substantial data is an example. Furthermore, it seems likely there will be an increasing number of global research teams as the amount of international management research grows significantly. Furthermore, research skills will be diffused globally with the continuing rapid development of management education and research in locations outside of North America, such as Asia, South America, and parts of Western Europe (e.g., Spain) and Eastern Europe. At the same time, the number of constituencies and the intensity of critiques will grow, increasing the pressure for both high-quality teaching and research in the management and business field. New journal outlets, particularly in Asia and Europe, can be expected to develop as management and business education spreads throughout the world. Clearly, the technological revolution and globalization, two trends having major impacts on management practice, also will have substantial effects on management research and education in the 21st century.

I was privileged to have outstanding people with whom to work during my time as editor, including four excellent consulting editors, Sue Ashford, Angelo DeNisi, Jane Dutton, and Alan Meyer. I also had a great Editorial Board and an outstanding editorial assistant, Wanda Bird. All of these people emphasized the same goals that I mentioned earlier. Our overall turnaround time during my editorship was less than two months, with the longest review time being four months (and this was an exception). Furthermore, all of these people provided high-quality, developmental feedback.

Whatever was accomplished during my term as editor is largely due to the efforts of these outstanding colleagues.

Personally, I gained much during my term as editor. I read a large amount of research, much of which I would not have normally read, given the tendency to read primarily in one's own subdisciplines. Although I was told when I was a young scholar that my research was too eclectic to allow me to develop an appropriate reputation and "make it" in this field, I was fascinated by the breadth and depth of the research being conducted in management. During the term, I learned to appreciate the many subdisciplines even more than previously. My previously eclectic approach to research helped me, as editor, to appreciate both different subdisciplines within management and different methodologies, and I believe that today I am more tolerant of different methodologies, different theoretical approaches, and different generic approaches to research. I learned about new methods and new statistical tools during my term as editor. Today, I am more eclectic in the methods used in my own research and have introduced some qualitative approaches into my studies. Furthermore, in line with the trend noted earlier, I attempt to be more integrative, trying to integrate theory from various disciplines and subdisciplines within management. I also hope that I am more understanding about the editorial dilemmas and decisions of others. However, my term as editor has had some less positive effects as well. Primarily, I am less tolerant of the long review times and low-quality feedback that are experienced at times with other journals.

It is my hope that our colleagues in the field will look back to the work published in *AMJ* during 1992–94 (this is the research that I largely shepherded and accepted during my term as editor) and evaluate it as quality work that made a contribution. I also hope that the authors who submitted their work to *AMJ* during my editorship feel that they received fair treatment and high-quality, prompt feedback.

It was my privilege and honor to serve as editor of the *Academy of Management Journal.* I consider it the preeminent journal in our field. My personal and work lives will be ever affected by the time I spent as editor of *AMJ.*

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EDITING THE *ACADEMY OF MANAGEMENT JOURNAL*: A VERY RECENT PERSPECTIVE

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As the (lucky?) 13th editor of the *Academy of Management Journal,* and the most recent past editor, I'm afraid I have very little to say about how the field of management has changed since I stepped down. Also, as a rather recent incumbent, I did not have to struggle with establishing the reputation of *AMJ,* because my predecessors did an excellent job of that. In fact, the biggest challenge facing me when I took over was to make sure that I could maintain the high standards that the earlier editors had set for the journal. My greatest fear was that, years from now, scholars in the field of management would look back and comment, "Oh, *AMJ.* It used to be a major journal, until DeNisi came along and. . . ." I suppose only time will tell whether or not the quality of the journal was maintained, but I think that taking over a well-established, high-quality journal made for a potentially easier job, and surely one different from some of the earlier editors' jobs.

As I began my term as editor, then, I did not see any need for major change in the operations of the journal, with the possible exception of a need for associate editors. As the field of management grew and became more diverse, it became less likely that any one person could really be an "expert" in all aspects of our field. Janice Beyer had recognized this some years ago and had introduced the position of consulting editor to *AMJ.* As many of you know, the idea was to establish several content-area experts who would provide an overview of the reviews given a submission either when there were conflicting recommendations or when the editor simply felt that a difficult decision called for special expertise. I think most of us would agree that this model was successful, as far as it went, but the editor still retained ultimate decision making. This, of course, meant that the journal would "speak in a single voice." But as submissions grew in both volume and complexity, it became more and more difficult for the editor to feel comfortable about making some decisions in areas outside of his or her own expertise. I could see the increasing specialization within the set of human resource papers I handled as consulting editor under Mike Hitt, and I also came to realize that serving as *AMJ* editor would be (and was) a full-time job. Also, I saw that other journals, of good quality and high standards, had

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adopted an associate editor model, seemingly successfully. Thus, even before I became editor for *AMJ,* I thought about whether the journal should move to this more decentralized model.

Once I began my term as editor, the situation seemed even clearer. Reading all new submissions (as well as the revisions and all the reviews) required more than 40 hours every week. I had agreed to do the job, knowing that the workload would be in this range, but knowing this at a cognitive level was not the same as actually experiencing the demands of the job. Furthermore, as the number of new submissions seemed to be increasing, the job would clearly become even more demanding in the future. Therefore, potentially fine future editors might be discouraged by the amount of work and simply not even consider taking the job. From a pure workload perspective, then, I believed it was time for *AMJ* to move to an associate editor model. When one combined the workload issue with the increasing difficulty of identifying reviewers in specialized areas of management, and later making decisions about papers in such areas, the arguments seemed compelling. I presented a proposal to the Board of Governors, requesting the establishment of a task force to look into the possibility of a different model. In addition to me, members of the quickly assembled task force were mostly past editors. A few months later, we came back to the Board and recommended that *AMJ* adopt an associate editor model.

What, exactly, were the issues to be considered by the Board of Governors at this point? It might seem that the decision would be a simple one (and I think it ultimately was), but there were some issues that needed to be considered. As noted above, consulting editors made recommendations to the editor, who made all decisions. An associate editor would be responsible for making her or his own decisions and, if a paper were to be revised and resubmitted, the revision would go back to the associate editor who made the decision (the so-called action editor). Presumably, the associate editor would also help identify reviewers with specialized expertise. Therefore, one immediate issue for the Academy was cost. Each associate editor would need an administrative assistant and a budget for copying and mailing (when handling revisions). Although the amounts involved were not that great (and were slightly offset by some anticipated reduced expenses for the editor), they were substantial enough that the Board of Governors needed to decide if this was an effective way to spend the members' money.

The other issue was a bit more difficult to deal with. There was a perception that some other journals that had moved to decentralized decision-making models were becoming more fractured and had lost their unified identities. The Board was very concerned about this, but reasoned that, if we explained all this to the editor and allowed her or him to pick people who had similar visions for the journal, the problem could be avoided.

Thus, the decision of the Board of Governors to move to an associate editor model was based on the view that, by reducing the workload, they would be more likely to find high-quality members of our field who would be willing to serve as editor, thus insuring the long-run health of *AMJ.* Also,

bringing in more specialized decision makers would make the review process fairer to the authors and more likely to result in high-quality manuscripts. It looked as though everyone could win, and the Board, always supportive of actions that make the Academy's publications better, recommended that this move was indeed worth the cost and that the next editor should be selected under an associate editor model. Anne Tsui, Greg Northcraft, and Rita Kosnik will have to determine how well the model is working, and the journal's broad constituents will see how it affects the field of management in the future; I hope it will change the field for the better, as individuals with more specialized expertise begin making final decisions about manuscripts submitted to *AMJ.*

As I noted earlier, there was not much else I wanted to change about the journal. I saw no reason to change its direction and, with so many unsolicited submissions coming in, I felt (and still feel) that the field should tell the editor what kinds of papers were valuable and interesting, rather than the other way around—although I did try to encourage and work with authors who submitted less typical papers to *AMJ.* I realized fairly quickly, though, that despite my having no plans to change the nature of the journal, some things would change as a function of my becoming editor, whether I intended that to be so or not. It seemed that, regardless of what I did or didn't do, our members made certain assumptions about me and certain attributions as well.

For example, I noticed an immediate increase from what Mike Hitt had reported in the number of submissions in what could be broadly termed industrial relations (IR). Apparently, in the first three months of my term as editor, I had received twice as many submissions in this area as Mike had received in three years. Why? Presumably authors believed that, since I was teaching in a School of Management and Labor Relations, I would be more sympathetic to these papers than someone else might be. As a result, we received a number of good papers in IR and some of these were published. In a similar fashion, *AMJ* began receiving submissions from psychologists dealing with cognitive processes in decision making, especially appraisal decisions, presumably because this is the type of research that I have done. Although most of these were not published (and many seemed inappropriate for the *AMJ* audience), it was clear that submissions to the journal changed a bit during my term as editor. Sometime later, I was told that someone had described my term as editor as a time when *AMJ* was being turned into an IR journal and that more "macro" papers and strategy papers were no longer welcome! This was indeed an unfortunate (and inaccurate) observation, but it was made clear to me that any editor, simply by virtue of her or his interests, will always have an impact on submissions, and thus publications—and eventually, on the nature of research in the field—whether this impact was intended or not!

As I mentioned above, I did try to encourage the authors of papers that were not typical of the type of paper we often published in *AMJ.* I was especially sensitive to complaints I had heard over time that *AMJ* was less

hospitable to papers from some areas within management than to those from others. I tried to include Editorial Board members who might be associated with the less-represented areas to signal that we were indeed interested in publishing high-quality papers in these areas. I was also concerned about perceptions that *AMJ* favored quantitative over qualitative papers and discouraged papers that did not follow strict guidelines. I don't think either perception was ever correct, but I felt a special obligation to try to address such concerns.

My strong feelings about these perceptions stemmed from the fact that, since I was trained as a psychologist, Academy members who were concerned about perceived biases at the journal would be even more concerned now that I was editor. As I noted, members in certain areas began sending more of their work to *AMJ,* and I was concerned that members in other areas would similarly begin sending fewer papers to the journal. So, I took even greater care when assigning reviewers to papers that were out of the ordinary. I made sure that I assigned reviewers who were more open-minded and more willing to tolerate a paper that "looked" different, as long as it made a contribution. I recall one specific paper we received that I found interesting but thought might not be appropriate for *AMJ,* since it used a very unusual methodology. But, sensitive to my own potential biases, I read the paper very carefully again, and realized that, although it WAS different, it was certainly within the purview of *AMJ,* and that I should do what I could to be sure that paper received a fair hearing. Since the paper WAS unusual, I called the author to discuss some potential reviewers (I tried to do this whenever a paper was really unusual) and some issues that I thought might be problems with the paper. The author recommended some reviewers, several of whom were individuals I had been thinking about myself, and the paper was sent to four individuals (two from the author's recommendations, unbeknownst to the author). All four reviewers commented that, at first glance, they questioned the paper's appropriateness for *AMJ* but, upon further reading, realized that it was appropriate and there was a potential contribution. The paper was eventually published, and I was proud, not only because it was (and is) a good paper, but because I was able to see beyond my own preferences and training to recognize good research using an unusual methodology. I believe it will become increasingly important for journals such as *AMJ* to be tolerant and accepting of a wide variety of methodologies, and it was important for me not to have hindered this acceptance.

Therefore, during my term as editor, I don't believe things happened much differently than they did under previous editors. The structural changes I helped implement were for the next editor, and most of my energies were directed toward managing the flow of manuscripts and trying to be sure that the field did not somehow suffer from the narrowness of my training. But that narrowness of training brings me to the final point I would like to address about my experience as editor, and this is the aspect of the job that was most important for me personally. In three years as editor, I read some 1,500 new submissions and another 600 revisions. Since these papers cov-

ered the entire spectrum of management research, ranging from papers on total quality management, through event studies, and all the way to a deconstructionist view of Walt Disney, I was exposed to areas, ideas, and methods that I never learned in graduate school and had had only limited exposure to in the ensuing years (since I tended to read papers closer to my own areas of interest). As a result of having to read these submissions, occasional background papers (so that I could understand the critical issues), and the variety of excellent reviewer comments, I learned more about the field of management than I could ever have imagined. I am not claiming that I am now an expert in an area such as population ecology (although there are a few other macro areas that I would like to pursue in the future), but I do have a better grasp of a wide variety of important issues. And, more importantly, I can appreciate what scholars in these different areas have to contribute to the theory and practice of management.

In closing, then, serving as the editor of the *Academy of Management Journal* was probably the greatest learning experience of my career. I hope to become a broader, better-informed researcher in the future, and I know I will be a better colleague as my appreciation for all areas of management research grows. Thus, although being editor was surely a great deal of work, and I did not enjoy the large number of rejection letters I had to write, the rewards were great as well. I came to know more people in our field, developed a greater respect for individuals and research topics I was unaware of before and, in general, grew as a scholar. I hope I left the journal in good shape, and I hope the associate editor model proves to help research in the field of management. But, in any case, being editor of *AMJ* was a unique experience that I will always be thankful for. In fact, there is only one job that I think is really better than being editor—being past editor—and I am enjoying that opportunity as well.

Academy of Management Journal
Volume 40

AUTHOR INDEX

Abrahamson, Eric. The emergence and prevalence of employee management rhetorics: The effects of long waves, labor unions, and turnover, 1875 to 1992. (3): 491–533.

Alavi, Maryam, Youngjin Yoo, and Douglas R. Vogel. Using information technology to add value to management education. (6): 1310–1333.

Allen, David G. See Aquino, Karl.

Ambrose, Maureen L. See Schminke, Marshall.

Aquino, Karl, Rodger W. Griffeth, David G. Allen, and Peter W. Hom. Integrating justice constructs into the turnover process: A test of a referent cognitions model. (5): 1208–1227.

Baker, Robert. See Ketchen, David J., Jr.

Baldwin, Timothy T., Michael D. Bedell, and Jonathan L. Johnson. The social fabric of a team-based M.B.A. program: Network effects on student satisfaction and performance. (6): 1369–1397.

Barkema, Harry G., Oded Shenkar, Freek Vermeulen, and John H. J. Bell. Working abroad, working with others: How firms learn to operate international joint ventures. (2): 426–442.

Baucus, David A. See Baucus, Melissa S.

Baucus, Melissa S., and David A. Baucus. Paying the piper: An Empirical examination of longer-term financial consequences of illegal corporate behavior. (1): 129–151.

Beckstein, Brenden A. See Ketchen, David J., Jr.

Bedell, Michael D. See Baldwin, Timothy T.

Bell, John H. J. See Barkema, Harry G.

Berger, Hans. See Nooteboom, Bart.

Beyer, Janice M. Building on past strengths with incremental change. (6): 1436–1441.

Beyer, Janice M., Prithviraj Chattopadhyay, Elizabeth George, William H. Glick, dt ogilvie, and Dulce Pugliese. The selective perception of managers revisited. (3): 716–737.

Block, Caryn J. See Heilman, Madeline E.

Boeker, Warren. Strategic change: The influence of managerial characteristics and organizational growth. (1): 152–170.

Bromiley, Philip. See McNamara, Gerry.

Butterfield, D. Anthony. See Powell, Gary N.

Cardinal, Laura B. See Miller, C. Chet.

Cascio, Wayne F., Clifford E. Young, and James R. Morris. Financial consequences of employment-change decisions in major U.S. corporations. (5): 1175–1189.

Catanach, Anthony H., Jr. See Wiseman, Robert M.

Chattopadhyay, Prithviraj. See Beyer, Janice M.

Combs, James G. See Ketchen, David J., Jr.

Comer, Lucette B. See Yammarino, Francis J.

Dacin, M. Tina. Isomorphism in context: The power and prescription of institutional norms. (1): 46–81.

Dean, Michelle A. See Ketchen, David J., Jr.

Delaney, John Thomas. See Jarley, Paul.

DeNisi, Angelo S. Editing the *Academy of Management Journal:* A very recent perspective. (6): 1456–1460.

Dickson, Pat H., and K. Mark Weaver. Environmental determinants and individual-level moderators of alliance use. (2): 404–425.

Dubinsky, Alan J. See Yammarino, Francis J.

Duhaime, Irene M. See Stimpert, J. L.

Dutton, Jane. See Rafaeli, Anat.

Engle, Elaine M., and Robert G. Lord. Implicit theories, self-schemas, and leader-member exchange. (4): 988–1010.

Ettlie, John E. See Swan, Peter F.

Florito, Jack. See Jarley, Paul.

Fouts, Paul A. See Russo, Michael V.

Frost, Peter J., and Cynthia V. Fukami. Teaching effectiveness in the organizational sciences: Recognizing and enhancing the scholarship of teaching. (6): 1271–1281.

Fukami, Cynthia V. See Frost, Peter J.

George, Elizabeth. See Beyer, Janice M.

Glick, William H. See Beyer, Janice M.

Glick, William H. See Miller, C. Chet.

Goes, James B., and Seung Ho Park. Interorganizational links and innovation: The case of hospital services. (3): 673–696.

Golden, Brian R. Further remarks on retrospective accounts in organizational and strategic management research. (5): 1243–1252.

Golden-Biddle, Karen. See Locke, Karen.

Gomez-Mejia, Luis R. See Tosi, Henry L.

Gordon, Paul J. Recollections of a publishing enthusiast. (6): 1414–1417.

Greening, Daniel W. See Turban, Daniel B.

Griffeth, Rodger W. See Aquino, Karl.

Hackley, Peter. See Webster, Jane.

Hagedoorn, John. See Osborn, Richard N.

Handler, Charles. See Ketchen, David J., Jr.

Haptonstahl, Dawn Ebe. See Ketchen, David J., Jr.

Harquail, Celia V. See Rafaeli, Anat.

Heilman, Madeline E., Caryn J. Block, and Peter Stathatos. The affirmative action stigma of incompetence: Effects of performance information ambiguity. (3): 603–625.

Hitt, Michael A. The maturation of the *Academy of Management Journal.* (6): 1450–1455.

Hitt, Michael A., Robert E. Hoskisson, and Hicheon Kim. International diversification: Effects on innovation and firm performance in product-diversified firms. (4): 767–798.

Hom, Peter W. See Aquino, Karl.

Honig, Heather. See Ketchen, David J., Jr.

Hoskisson, Robert E. See Hitt, Michael A.

Human, Sherrie E., and Keith G. Provan. An emergent theory of structure and outcomes in small-firm strategic manufacturing networks. (2): 368–403.

Huselid, Mark A., Susan E. Jackson, and Randall S. Schuler. Technical and strategic human resource management effectiveness as determinants of firm performance. (1): 171–188.

Jackson, Paul R. See Parker, Sharon K.

Jackson, Susan E. See Huselid, Mark A.

Jarley, Paul, Jack Fiorito, and John Thomas Delaney. A structural contingency approach to bureaucracy and democracy in U.S. national unions. (4): 831–861.

Johnson, Jonathan L. See Baldwin, Timothy T.

Jolson, Marvin A. See Yammarino, Francis J.

Katz, Jeffrey P. See Tosi, Henry L.

Ketchen, David J., Jr., James G. Combs, Craig J. Russell, Chris Shook, Michelle A. Dean, Janet Runge, Franz T. Lohrke, Stefanie E. Naumann, Dawn Ebe Haptonstahl, Robert Baker, Brenden A. Beckstein, Charles Handler, Heather Honig, and Stephen Lamoureux. Organizational configurations and performance: A meta-analysis. (1): 223–240.

Kim, Hicheon. See Hitt, Michael A.

Lamoureux, Stephen. See Ketchen, David J., Jr.

Leicht, Kevin T., and Jonathan Marx. The consequences of informal job finding for men and women. (4): 967–987.

Lengnick-Hall, Cynthia A., and Martha M. Sanders. Designing effective learning systems for management education: Student roles, requisite variety, and practicing what we teach. (6): 1334–1368.

Liden, Robert C. See Wayne, Sandy J.

Locke, Karen, and Karen Golden-Biddle. Constructing opportunities for contribution: Structuring intertextual coherence and "problematizing" in organizational studies. (5): 1023–1062.

Lohrke, Franz T. See Ketchen, David J., Jr.

Lord, Robert G. See Engle, Elaine M.

Luthans, Fred. See Stajkovic, Alexander D.

Mackie-Lewis, Stephanie. See Rafaeli, Anat.

Mahoney, Thomas A. Reflections upon a stage in the maturation of *AMJ* and the AOM. (6): 1432–1435.

Markóczy, Lívia. Measuring beliefs: Accept no substitutes. (5): 1228–1242.

Marx, Jonathan. See Leicht, Kevin T.

McNamara, Gerry, and Philip Bromiley. Decision making in an organizational setting: Cognitive and organizational influences on risk assessment in commercial lending. (5): 1063–1088.

McWilliams, Abagail, and Donald Siegel. Event studies in management research: Theoretical and empirical issues. (3): 626–657.

Merritt, Deryl E. See Schaubroeck, John.

Miller, C. Chet, Laura B. Cardinal, and William H. Glick. Retrospective reports in organizational research: A reexamination of recent evidence. (1): 189–204.

Miner, John B. Participating in profound change. (6): 1420–1428.

Morris, James R. See Cascio, Wayne F.

Mowday, Richard T. Celebrating 40 years of the *Academy of Management Journal.* (6): 1400–1413.

Mowday, Richard T. The journal editor as well-intentional steward. (6): 1442–1449.

Naumann, Stefanie E. See Ketchen, David J., Jr.

Noel, Terry W. See Schminke, Marshall.

Noorderhaven, Niels G. See Nooteboom, Bart.

Nooteboom, Bart, Hans Berger, and Niels G. Noorderhaven. Effects of trust and governance on relational risk. (2): 308–338.

ogilvie, dt. See Beyer, Janice M.

Osborn, Richard N., and John Hagedoorn. The institutionalization and evolutionary dynamics of interorganizational alliances and networks. (2): 261–278.

Park, Seung Ho. See Goes, James B.

Park, Seung Ho, and Gerardo R. Ungson. The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution. (2): 279–307.

Parker, Sharon K., Toby D. Wall, and Paul R. Jackson. "That's not my job": Developing flexible employee work orientations. (4): 899–929.

Pearce, Jone L. See Tsui, Anne S.

Peterson, Mark F., and Peter B. Smith. Does national culture or ambient temperature explain cross-national differences in role stress? No sweat! (4): 930–946.

Porter, Lyman W. See Tsui, Anne S.

Powell, Gary N., and D. Anthony Butterfield. Effects of race on promotions to top management in a federal department. (1): 112–128.

Pratt, Michael G., and Anat Rafaeli. Organizational dress as a symbol of multilayered social identities. (4): 862–898.

Provan, Keith G. See Human, Sherrie E.

Pugliese, Dulce. See Beyer, Janice M.

Rafaeli, Anat, Jane Dutton, Celia V. Harquail, and Stephanie Mackie-Lewis. Navigating by attire: The use of dress by female administative employees. (1): 9–45.

Rafaeli, Anat. See Pratt, Michael G.

Ramaswamy, Kannan. The performance impact of strategic similarity in horizontal mergers: Evidence from the U.S. banking industry. (3): 697–715.

Runge, Janet. See Ketchen, David J., Jr.

Russell, Craig J. See Ketchen, David J., Jr.

Russo, Michael V., and Paul A. Fouts. A resource-based perspective on corporate environmental performance and profitability. (3): 534–559.

Sanders, Martha M. See Lengnick-Hall, Cynthia A.

Saxton, Todd. The effects of partner and relationship characteristics on alliance outcomes. (2): 443–462.

Schaubroeck, John, and Deryl E. Merritt. Divergent effects of job control on coping with work stressors: The key role of self-efficacy. (3): 738–754.

Schminke, Marshall, Maureen L. Ambrose, and Terry W. Noel. The effect of ethical frameworks on perceptions of organizational justice. (5): 1190–1207.

Schuler, Randall S. See Huselid, Mark A.

Shenkar, Oded. See Barkema, Harry G.

Shook, Chris. See Ketchen, David J., Jr.

Shore, Lynn M. See Wayne, Sandy J.

Siegel, Donald. See McWilliams, Abagail.

Simonin, Bernard L. The importance of collaborative know-how: An empirical test of the learning organization. (5): 1150–1174.

Singh, Kulwant. The impact of technological complexity and interfirm cooperation on business survival. (2): 339–367.

Slocum, John W., Jr. Unlearning to learn. (6): 1429–1431.

Smith, Peter B. See Peterson, Mark F.

Stajkovic, Alexander D., and Fred Luthans. A meta-analysis of the effects of organizational behavior modification on task performance, 1975–95. (5): 1122–1149.

Stathatos, Peter. See Heilman, Madeline E.

Stevens, Cynthia Kay. Effects of preinterview beliefs on applicants' reactions to campus interviews. (4): 947–966.

Stimpert, J. L., and Irene M. Duhaime. Seeing the big picture: The influence of industry, diversification, and business strategy on performance. (3): 560–583.

Swan, Peter F., and John E. Ettlie. U.S.-Japanese manufacturing equity relationships. (2): 463–479.

Tosi, Henry L., Jeffrey P. Katz, and Luis R. Gomez-Mejia. Disaggregating the agency contract: The effects of monitoring, incentive alignment, and term in office on agent decision making. (3): 584–602.

Turban, Daniel B., and Daniel W. Greening. Corporate social performance and organizational attractiveness to prospective employees. (3): 658–672.

Tripoli, Angela M. See Tsui, Anne S.

Tsui, Anne S., Jone L. Pearce, Lyman W. Porter, and Angela M. Tripoli. Alternative approaches to the employee-organization relationship: Does investment in employees pay off? (5): 1089–1121.

Ungson, Gerardo R. See Park, Seung Ho.

Vance, Stanley C. The Academy of Management takes off. (6): 1418–1419.

Vermeulen, Freek. See Barkema, Harry G.

Vogel, Douglas R. See Alavi, Maryam.

Wall, Toby D. See Parker, Sharon K.

Wayne, Sandy J., Lynn M. Shore, and Robert C. Liden. Perceived organizational support and leader-member exchange: A social exchange perspective. (1): 82–111.

Weaver, K. Mark. See Dickson, Pat H.

Webster, Jane, and Peter Hackley. Teaching effectiveness in technology-mediated distance learning. (6): 1282–1309.

Wiseman, Robert M., and Anthony H. Catanach, Jr. A longitudinal disaggregation of operational risk under changing regulations: Evidence from the savings and loan industry. (4): 799–830.

Yammarino, Francis J., Alan J. Dubinsky, Lucette B. Comer, and Marvin A. Jolson. Women and transformational and contingent reward leadership: A multiple-levels-of-analysis perspective. (1): 205–222.

Yoo, Youngjin. See Alavi, Maryam.

Young, Clifford E. See Cascio, Wayne F.

TITLE INDEX

The Academy of Management takes off. Stanley C. Vance. (6): 1418–1419.

The affirmative action stigma of incompetence: Effects of performance information ambiguity. Madeline E. Heilman, Caryn J. Block, and Peter Stathatos. (3): 603–625.

Alternative approaches to the employee-organization relationship: Does investment in employees pay off? Anne S. Tsui, Jone L. Pearce, Lyman W. Porter, and Angela M. Tripoli. (5): 1089–1121.

Building on past strengths with incremental change. Janice M. Beyer. (6): 1436–1441.

***Celebrating 40 years of the* Academy of Management Journal.** Richard T. Mowday. (6): 1400–1413.

The consequences of informal job finding for men and women. Kevin T. Leicht and Jonathan Marx. (4): 967–987.

Constructing opportunities for contribution: Structuring intertextual coherence and "problematizing" in organizational studies. Karen Locke and Karen Golden-Biddle. (5): 1023–1062.

Corporate social performance and organizational attractiveness to prospective employees. Daniel B. Turban and Daniel W. Greening. (3): 658–672.

Decision making in an organizational setting: Cognitive and organizational influences on risk assessment in commercial lending. Gerry McNamara and Philip Bromiley. (5): 1063–1088.

Designing effective learning systems for management education: Student roles, requisite variety, and practicing what we teach. Cynthia A. Lengnick-Hall and Martha M. Sanders. (6): 1334–1368.

Disaggregating the agency contract: The effects of monitoring, incentive alignment, and term in office on agent decision making. Henry L. Tosi, Jeffrey P. Katz, and Luis R. Gomez-Mejia. (3): 584–602.

Divergent effects of job control on coping with work stressors: The key role of self-efficacy. John Schaubroeck and Deryl E. Merritt. (3): 738–754.

Does national culture or ambient temperature explain cross-national differences in role stress? No sweat! Mark F. Peterson and Peter B. Smith. (4): 930–946.

Editing the* Academy of Management Journal: *A very recent perspective. Angelo S. DeNisi. (6): 1456–1460.

The effect of ethical frameworks on perceptions of organizational justice. Marshall Schminke, Maureen L. Ambrose, and Terry W. Noel. (5): 1190–1207.

The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution. Seung Ho Park and Gerardo R. Ungson. (2): 279–307.

The effects of partner and relationship characteristics on alliance outcomes. Todd Saxton. (2): 443–462.

Effects of preinterview beliefs on applicants' reactions to campus interviews. Cynthia Kay Stevens. (4): 947–966.

Effects of race on promotions to top management in a federal department. Gary N. Powell and D. Anthony Butterfield. (1): 112–128.

Effects of trust and governance on relational risk. Bart Nooteboom, Hans Berger, and Niels G. Noorderhaven. (2): 308–338.

The emergence and prevalence of employee management rhetorics: The effects of long waves, labor unions, and turnover, 1875 to 1992. Eric Abrahamson. (3): 491–533.

An emergent theory of structure and outcomes in small-firm strategic manufacturing networks. Sherrie E. Human and Keith G. Provan. (2): 368–403.

Environmental determinants and individual-level moderators of alliance use. Pat H. Dickson and K. Mark Weaver. (2): 404–425.

Event studies in management research: Theoretical and empirical issues. Abagail McWilliams and Donald Siegel. (3): 626–657.

Financial consequences of employment-change decisions in major U.S. corporations. Wayne F. Cascio, Clifford E. Young, and James R. Morris. (5): 1175–1189.

Further remarks on retrospective accounts in organizational and strategic management research. Brian R. Golden. (5): 1243–1252.

The impact of technological complexity and interfirm cooperation on business survival. Kulwant Singh. (2): 339–367.

Implicit theories, self-schemas, and leader-member exchange. Elaine M. Engle and Robert G. Lord. (4): 988–1010.

The importance of collaborative know-how: An empirical test of the learning organization. Bernard L. Simonin. (5): 1150–1174.

The institutionalization and evolutionary dynamics of interorganizational alliances and networks. Richard N. Osborn and John Hagedoorn. (2): 261–278.

Integrating justice constructs into the turnover process: A test of a referent cognitions model. Karl Aquino, Rodger W. Griffeth, David G. Allen, and Peter W. Hom. (5): 1208–1227.

International diversification: Effects on innovation and firm performance in prod-

uct-diversified firms. Michael A. Hitt, Robert E. Hoskisson, and Hicheon Kim. (4): 767–798.

Interorganizational links and innovation: The case of hospital services. James B. Goes and Seung Ho Park. (3): 673–696.

Isomorphism in context: The power and prescription of institutional norms. M. Tina Dacin. (1): 46–81.

The journal editor as well-intentioned steward. Richard T. Mowday. (6): 1442–1449.

A longitudinal disaggregation of operational risk under changing regulations: Evidence from the savings and loan industry. Robert M. Wiseman and Anthony H. Catanach, Jr. (4): 799–830.

***The maturation of the* Academy of Management Journal.** Michael A. Hitt. (6): 1450–1455.

Measuring beliefs: Accept no substitutes. Lívia Markóczy. (5): 1228–1242.

A meta-analysis of the effects of organizational behavior modification on task performance, 1975–95. Alexander D. Stajkovic and Fred Luthans. (5): 1122–1149.

Navigating by attire: The use of dress by female administrative employees. Anat Rafaeli, Jane Dutton, Celia V. Harquail, and Stephanie Mackie-Lewis. (1): 9–45.

Organizational configurations and performance: A meta-analysis. David J. Ketchen, Jr., James G. Combs, Craig J. Russell, Chris Shook, Michelle A. Dean, Janet Runge, Franz T. Lohrke, Stefanie E. Naumann, Dawn Ebe Haptonstahl, Robert Baker, Brenden A. Beckstein, Charles Handler, Heather Honig, and Stephen Lamoureux. (1): 223–240.

Organizational dress as a symbol of multilayered social identities. Michael G. Pratt and Anat Rafaeli. (4): 862–898.

Participating in profound change. John B. Miner. (6): 1420–1428.

Paying the piper: An empirical examination of longer-term financial consequences of illegal corporate behavior. Melissa S. Baucus and David A. Baucus. (1): 129–151.

Perceived organizational support and leader-member exchange: A social exchange perspective. Sandy J. Wayne, Lynn M. Shore, and Robert C. Liden. (1): 82–111.

The performance impact of strategic similarity in horizontal mergers: Evidence from the U.S. banking industry. Kannan Ramaswamy. (3): 697–715.

Recollections of a publishing enthusiast. Paul J. Gordon. (6): 1414–1417.

Reflections upon a stage in the maturation of AMJ and the AOM. Thomas A. Mahoney. (6): 1432–1435.

A resource-based perspective on corporate environmental performance and profitability. Michael V. Russo and Paul A. Fouts. (3): 534–559.

Retrospective reports in organizational research: A reexamination of recent evidence. C. Chet Miller, Laura B. Cardinal, and William H. Glick. (1): 189–204.

Seeing the big picture: The influence of industry, diversification, and business strategy on performance. J. L. Stimpert and Irene M. Duhaime. (3): 560–583.

The selective perception of managers revisited. Janice M. Beyer, Prithviraj Chattopadhyay, Elizabeth George, William H. Glick, dt ogilvie, and Dulce Pugliese. (3): 716–737.

The social fabric of a team-based M.B.A. program: Network effects on student satisfaction and performance. Timothy T. Baldwin, Michael D. Bedell, and Jonathan L. Johnson. (6): 1369–1397.

Strategic change: The influence of managerial characteristics and organizational growth. Warren Boeker. (1): 152–170.

A structural contingency approach to bureaucracy and democracy in U.S. national unions. Paul Jarley, Jack Fiorito, and John Thomas Delaney. (4): 831–861.

Teaching effectiveness in technology-mediated distance learning. Jane Webster and Peter Hackley. (6): 1282–1309.

Teaching effectiveness in the organizational sciences: Recognizing and enhancing the scholarship of teaching. Peter J. Frost and Cynthia V. Fukami. (6): 1271–1281.

Technical and strategic human resource management effectiveness as determinants of firm performance. Mark A. Huselid, Susan E. Jackson, and Randall S. Schuler. (1): 171–188.

"That's not my job": Developing flexible employee work orientations. Sharon K. Parker, Toby D. Wall, and Paul R. Jackson. (4): 899–929.

U.S.-Japanese manufacturing equity relationships. Peter F. Swan and John E. Ettlie. (2): 463–479.

Unlearning to learn. John W. Slocum, Jr. (6): 1429–1431.

Using information technology to add value to management education. Maryam Alavi, Youngjin Yoo, and Douglas R. Vogel. (6): 1310–1333.

Women and transformational and contingent reward leadership: A multiple-levels-of-analysis perspective. Francis J. Yammarino, Alan J. Dubinsky, Lucette B. Comer, and Marvin A. Jolson. (1): 205–222.

Working abroad, working with others: How firms learn to operate international joint ventures. Harry G. Barkema, Oded Shenkar, Freek Vermeulen, and John H. J. Bell. (2): 426–442.

SUBJECT INDEX

Acquisition strategy, 279–307, 443–462, 697–715, 1175–1189
Agency theory, 584–602, 799–830
Attribution theory, 603–625, 1243–1252

Behavioral decision theory, 799–830
Behavioral management, 1122–1149
Boards of directors, 584–602

Careers, 603–625, 967–987
  planning and development, 112–128
  race and gender effects, 112–128, 603–625
Causal mapping, 1228–1242
Change processes, 152–170, 899–929, 1243–1252
Cognition, 9–45, 603–625, 716–737, 862–898, 947–966, 988–1010, 1063–1088, 1228–1242, 1243–1252
  individual- and group-level, 716–737, 862–898
  organization-level, 261–278, 1063–1088
  social, 9–45, 491–533, 603–625, 716–737, 947–966, 988–1010, 1122–1149
Collective action, 261–278, 673–696
Commitment, 82–111, 899–929, 1089–1121, 1208–1227
Communication, groups, 443–462, 1334–1368
  interpersonal, 1228–1242, 1334–1368
  networks, 967–987, 1310–1333
  verbal and nonverbal, 947–966
Compensation, 584–602
Competitive advantage, 261–278, 443–462, 534–559, 697–715, 1150–1174
Competitive strategy, 261–278, 534–559
Conflict management, 862–898
Constructive replication, 716–737
Contingency theory, 261–278, 831–861, 1089–1121, 1122–1149
Control and reward systems, 584–602, 1089–1121, 1122–1149
  organizational, 443–462, 899–929, 1063–1088, 1089–1121
Control theory, 584–602, 988–1010
Corporate governance, 799–830
Corporate social responsibility and performance, 129–151, 534–559, 626–657, 658–673
Cultural anthropology, 930–946
Culture, corporate and organizational, 279–307, 404–425, 443–462, 491–533, 862–898, 967–987
  national, 279–307

Decision making, 584–602, 716–737, 799–830, 947–966, 967–987, 1063–1088
  error/bias, 716–737, 799–830, 1063–1088, 1243–1252
  organizational, 1063–1088
  strategic, 626–657, 799–830, 1063–1088
Distance learning, 1282–1309
Diversification, 261–278, 443–462, 560–583, 767–798, 967–987
Diversity, 112–128, 603–625, 967–987, 1334–1368
Divestments, 1175–1189

Ecological dynamics, 534–559
Ecological economics, 534–559
Embeddedness perspective, 46–81, 261–278, 443–462, 491–533
Environment, organizational, 46–81, 261–278, 368–403, 404–425, 491–533, 534–559, 831–861
Environmental forces, 46–81, 261–278, 491–533, 534–559
Equity theory, 967–987, 1089–1121, 1208–1227
Event history analysis, 46–81, 426–442
Event study, 626–657
Exchange theory, 82–111, 205–222, 261–278, 1089–1121
Expectancy theory, 947–966

Feminist theory, 967–987
Finance, 626–657

Game theory, 442–462
Gender, 205–222, 603–625, 967–987
Goal-setting theory, 1334–1368
Groups, communication, 443–462, 1334–1368
  composition, 967–987
  feedback, 988–1010, 1122–1149
  intergroup relations, 967–987, 1369–1397
  structure, 967–987

Health and safety, 738–754
Health care administration, 673–696
Human capital theory, 1175–1189

Image theory, 442–463, 1243–1252
Impression management, 9–45, 947–966, 1243–1252
Individual differences, 738–754, 1190–1207
Industrial/organizational theory, 261–278, 308–338, 534–559, 930–946
Industry-structure economics, 223–240, 261–278, 560–583
Innovation, 261–278, 308–338, 339–367, 443–462, 463–479, 491–533, 673–696, 767–798, 1310–1333
Institutional theory, 46–81, 171–188,

261–278, 279–307, 308–338, 404–425, 491–533
Interactionist theory, 9–45
Internal labor markets, 1089–1121
International management, 261–278, 279–307, 426–442, 463–479, 767–798, 930–946
Interorganizational relations/networks, 261–278, 308–338, 339–367, 368–403, 443–462, 491–533, 673–696
Interpretive perspective, 1023–1062, 1243–1252

Job analysis, 899–929

Leadership, 82–111, 205–222, 988–1010
  dyadic exchange relationships, 205–222
  leader-member exchange (LMX), 82–111, 988–1010
  transformational and contingent reward, 205–222
Learned helplessness, 899–929
Learning, 261–278, 443–462, 1122–1149, 1150–1174, 1334–1368
  individual, 1334–1368
  organizational, 261–278, 426–442, 443–462, 767–798, 1150–1174

Management education and scholarship, 1400–1413, 1414–1417, 1418–1419, 1420–1428, 1429–1431, 1432–1437, 1436–1441, 1442–1449, 1450–1455, 1456–1460
Management education and development, 1282–1309, 1310–1333, 1334–1368, 1369–1397
Management history, 491–533
Mergers and acquisitions, 261–278, 697–715
Meta-analysis, 223–240, 1122–1149
Motivation, 82–111, 899–929, 1089–1121, 1208–1227

Networks, 261–278, 368–403, 443–462, 967–987, 1369–1397
  communication, 967–987, 1310–1333

Operant learning, 1122–1149
Organizational behavior modification, 1122–1149
Organizational configurations, 223–240
Organizational design, 261–278, 831–861, 899–929, 1334–1368
Organizational economics, 261–278, 279–307, 308–338, 339–367, 673–696
Organizational effectiveness, 223–240, 261–278, 308–338, 339–367, 368–403, 443–462, 899–929
Organizational identity, 862–898
Organizational justice, 1190–1207, 1208–1227
  distributive justice, 1190–1207
  procedural justice, 1190–1207
Organizational learning theory, 767–798
Organizational size, 831–861
Organizational symbolism, 9–45, 862–898

Perceived organizational support, 82–111
Performance behaviors, 82–111, 205–222, 899–929, 1334–1368
Population ecology theory, 46–81, 261–278
Power and politics, 261–278, 443–462, 899–929
Professional identity, 862–898
Promotion, 112–128
Prospect theory, 799–830, 1063–1088
Psychological contracts, 1089–1121
Publishing in the organizational sciences, 1400–1413, 1414–1417, 1418–1419, 1420–1428, 1429–1431, 1432–1435, 1436–1441, 1442–1449, 1450–1455, 1456–1460

Quality and productivity, 491–533, 899–929, 1122–1149, 1334–1368

Recruitment, 658–673, 947–966, 967–987
Reinforcement theory, 1122–1149
Reputation, 443–462
Resource dependence theory, 189–204, 261–278, 404–425, 443–462, 673–696
Resource-based view of the firm, 171–188, 189–204, 308–338, 339–367, 404–425, 426–442, 443–462, 534–559, 673–696, 697–715, 767–798, 1150–1174
Retrospective reports, 189–204, 1243–1252
Reward systems, 1122–1149
Rhetorical theory, 491–533, 1023–1062
Risk management, 799–830, 1063–1088
Role stress theory, 930–946

Satisfaction, 491–533
Schema theory, 9–45, 998–1010
Self-fulfilling prophecy, 947–966
Self-management, 1334–1368
Self-efficacy, 738–754
Signaling theory, 658–673
Social comparison theory, 1208–1227
Social identity theory, 9–45, 658–673, 862–898
Social information processing theory, 603–625, 716–737, 988–1010
Social learning theory, 426–442, 1122–1149
Socialization, 899–929, 1334–1368
Stockholders, 129–151
Strategic alliances, 261–278, 279–307, 308–338, 339–367, 368–403, 404–425, 426–442, 443–462, 463–479, 673–696, 1150–1174
  international, 261–278
Strategic contingencies theory, 152–170, 189–204, 223–240, 261–278, 279–307

Strategic entry and exit, 261–278
Strategy, business-level, 189–204, 261–278, 308–338, 339–367, 368–403, 443–462, 463–479, 560–583
  corporate-level, 152–170, 261–278, 560–583, 697–715, 767–798
  international, 261–278, 443–462, 463–479, 767–798
  stakeholders and, 129–151, 534–559, 626–657
Stress, 738–754, 930–946
Structural choice, 261–278, 443–462
Structural contingency theory, 261–278, 279–307, 831–861, 1334–1368
Structuration theory, 261–278, 967–987
Sustainable development, 534–559
Symbolic interactionism, 491–533

Task design, 738–754, 899–929, 930–946
Task performance, 1122–1149
Teaching effectiveness, 1282–1309, 1310–1333, 1334–1368, 1369–1397
Technology, 261–278, 308–338, 339–367, 673–696
Technology and innovation management, 261–278, 308–338, 339–367, 463–479, 673–696, 1310–1333
Top management teams, 152–170, 404–425
  transitions, 1243–1252
Training, 899–929, 1282–1309, 1310–1333, 1334–1368, 1369–1397
Transaction costs, 189–204, 261–278, 279–307, 308–338, 339–367, 404–425, 443–462, 463–479, 673–696, 767–798
Trust, 308–338
Turnover, 82–111, 491–533, 967–987, 1208–1227

Vertical integration, 261–278

Within and between analysis (WABA), 205–222
Women in management, 205–222, 603–625, 967–987

© *Academy of Management Journal*
1997, Vol. 40, No. 6, 1469–1474.

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2. To managerial knowledge—Prudence in research design, human subject use, confidentiality, result reporting, and proper attribution of work is a necessity.
3. To the Academy of Management and the larger professional environment—Support of the Academy's mission and objectives, service to the Academy and our institutions, and the recognition of the dignity and personal worth of colleagues is required.
4. To both managers and the practice of management—Exchange of ideas and information between the academic and organizational communities is essential.
5. To all people with whom we live and work in the world community—Sensitivity to other people, to diverse cultures, to the needs of the poor and disadvantaged, to ethical issues, and to newly emerging ethical dilemmas is required.

STUDENT RELATIONSHIPS

In our roles as educators, the central principles that underlie appropriate student-educator relationships are professionalism, respect, fairness, and concern.

Striving for teaching excellence. It is the duty of Academy members who are educators to prepare themselves carefully. Maintenance of current knowledge in the field requires a broad understanding of management theories, research and practice, and use of current classroom materials. Educators should have or develop expertise in the areas in which they teach. Effective teaching requires sufficient time allocated to preparation, clear classroom communication, timely grading, and a willingness to provide an explanation of a student's grade. Educators should act as role models in their relationships. They should also sensitize students to the ethical dimensions of management. In addition, educators have an obligation to present material without conscious bias and to make their own relevant biases known to their students. Educators should attempt to evaluate their teaching through some appropriate outcome assessment method which goes beyond concept retention.

Showing respect for students. It is the duty of Academy members who are educators to show appropriate respect for students' feelings, interests, needs, contributions, and intellectual freedom. Students' right to privacy requires maintaining the confidentiality of academic records and private communications, unless disclosure is mandated by law, institutional policy, or morally compelling purpose. Educators must avoid manipulation, coercion, or exploitation of students (especially acts directed at securing monetary, ego, or sexual gratification) and should demonstrate a sensitivity to cultural and personal diversity by avoiding racial, sexual, religious, and ethnic discrimination.

Maintenance of objectivity and fairness. It is the duty of Academy members who are educators to treat students equitably. Fair treatment of students requires explicitly explaining and adhering to academic requirements and standards. Any subsequent change in these requirements or standards, either of the institution or in an individual course, should appropriately recognize the impact on students. Impartiality, objectivity, and fairness are required in all dealings with students. Examinations should be carefully prepared and written work graded in an impartial manner. Educators should scrupulously avoid entering any overly personal relationship or accepting any gift or favor which might influence, or appear to influence, an objective evaluation of a student's work. Appropriate evaluation of student performance requires test design, assignments, and testing conditions which minimize the possibility of academic misconduct. It is the educator's responsibility to pursue appropriate disciplinary action if necessary.

Counseling of students. It is the duty of Academy members to be helpful and sensitive in counseling students. When serving as academic advisors, members must be knowledgeable about academic requirements and should communicate these clearly and fully to advisees. Educators may play critical roles in a variety of counseling situations. This requires careful analysis of the student and situation and calls for special expertise and competence. Counseling advice should be identified as an expression of the member's own opinion. Letters of recommendation require candor and fairness. Members should not make insupportable statements nor fail to disclose material facts.

ADVANCEMENT OF MANAGERIAL KNOWLEDGE

Research of Academy members should be done honestly, have a clear purpose, show respect for the rights of all individuals and organizations, efficiently use resources, and advance knowledge in the field.

Conducting and reporting. It is the duty of Academy members conducting research to design, implement, analyze, report, and present their findings rigorously. Research rigor includes careful design, execution, analysis, interpretation of results, and retention of data. Presentation of research should include a treatment of the data that is honest and that reveals both strengths and weaknesses of findings. When important alternate hypotheses or explanations exist, they should be noted and data that disconfirm hypotheses should be acknowledged. Authorship and credit should be shared in correct proportion to the various parties' contributions. Whether published or not, ideas or concepts derived from others should be acknowledged, as should advice and assistance received. Many management-related journals have policies prohibiting or restricting potential articles from being reviewed concurrently in other outlets. These policies should be closely observed or there should be explicit discussion with the relevant journal editors concerning the intended multiple submissions. More than one report of essentially the same data and results should not be published unless the reports are explicitly directed to different audiences through different types of outlets. When several separate but related reports result from a single study, the existence of the different reports should be made known to the relevant journal editors and the reports should reference each other. Reviewer comments should be considered thoughtfully before a manuscript is submitted to a different journal.

Participants. It is the duty of Academy members to preserve and protect the privacy, dignity, well-being, and freedom of research participants. This duty requires both careful research design and informed consent from all participants. Risks and the possibility of harm to research participants must be carefully considered and, to the extent possible, these must be minimized. When there is a degree of risk or potential harm inherent in the research, potential participants—organizations as well as individuals—must be informed. Informed consent means explaining to potential participants the purposes and nature of the research so they can freely choose whether or not to become involved. Such explanations include warning of possible harm and providing explicit opportunities to refuse to participate and to terminate participation at any time. Because students and employees are particularly subject to possible coercion, even when unintended, special care must be taken in obtaining their informed consent. Third-party

review is one means of protecting the interests of research participants. Research plans involving human participants should be reviewed by an appropriate third party, such as a university human subjects committee or a focus group of potential participants. Questions regarding confidentiality or anonymity must be resolved between researcher and potential research participants, both individuals and organizations; if confidentiality or anonymity is requested, this must be honored. Deception should be minimized and, when necessary, the degree and effects must be mitigated as much as possible. Researchers should carefully weigh the gains achieved against the cost in human dignity. To the extent that concealment or deception is necessary, the researcher must provide a full and accurate explanation to participants at the conclusion of the study, including counseling, if appropriate.

Dissemination. It is the duty of journal editors and reviewers to exercise their position of privilege in a confidential, unbiased, prompt, constructive, and sensitive manner. They have a duty to judge manuscripts only on their scholarly merits. Conflicts of interest may arise when a reviewer is in basic disagreement with the research approach or the line of research represented by a manuscript. In such cases, a reviewer should consult with the journal editor to decide whether to accept or decline to review the manuscript. Protecting intellectual property is a responsibility of the reviewer and the editor. The content of a manuscript is the property of its authors. It is therefore inappropriate to use ideas or show another person a manuscript one has been asked to review, without the explicit permission of its authors. Advice regarding specific, limited aspects of the manuscript may be sought from qualified colleagues so long as the author's intellectual property remains secure. Sharing of reviewing responsibilities is inappropriate. The review is the sole responsibility of the person to whom it was assigned by the journal editor. In particular, students and colleagues should not be asked to prepare reviews unless the journal's editor has given explicit approval. Anyone contributing to a review should receive formal recognition. Constructive review means providing critiques and comments in a spirit of collegiality with thoroughness, timeliness, compassion, and respect, and in ways intended to improve the quality of the manuscript.

Grants and contracts. It is the duty of Academy members to accurately represent themselves and their proposed projects and to manage those projects as promised. Representation means accurate disclosure of one's level of expertise and expected actual involvement, the outcomes that can be reasonably expected, the realistic funding level needed, and potential conflicts of interest. Grant and contract management requires independence and objectivity such that one does not compromise one's responsibilities or create conflicts of interest. One must also manage time and budget responsibly and use the funds as promised unless permission is explicitly granted to do otherwise.

THE ACADEMY OF MANAGEMENT AND THE LARGER PROFESSIONAL ENVIRONMENT

The Mission Statement of the Academy describes member benefits and professional opportunities of members which impose corresponding duties and service responsibilities.

Sharing and dissemination of information. To encourage meaningful exchange, Academy members should foster a climate of free interchange and constructive criticism within the Academy and be willing to share research findings and insights fully with other members.

Academy participation. The Academy is a voluntary association whose existence and operations are dependent on cooperation, involvement, and leadership from its members. Members should abide by the constitution, by laws, policies, and codes of the Academy. Members should consider offering their time and talent to carry out activities necessary to maintain the Academy and its functions. Officers and members should fulfill their Academy obligations and responsibilities in a timely, diligent, and sensitive manner, without regard to friendships or personal gain. Members should honor all professional commitments, including presentation of accepted papers and participation in scheduled roles as chair, discussant, or panel member. If absence from a scheduled meeting is unavoidable, members must contact appropriate individuals and pursue suitable alternative arrangements. One should consider the impact one's projects or activities may have on the integrity or reputation of the Academy and one should not engage

in such projects or activities that may have possible negative implications. Members should not imply that their work is sanctioned by the Academy unless an appropriate Academy body has specifically done so.

Commitment to professional standards of conduct. By this code, the Academy provides ongoing ethical guidance for its members. Members should work to raise the consciousness of other members concerning ethical responsibilities, and they should encourage acceptance of these responsibilities. Members should notify appropriate Academy officers or committees regarding the practices or actions of members they believe may violate Academy regulations or general standards of ethical conduct. In this manner, the aspirational and educational goals of this code are served through discussion of the ethical dilemmas and values of our profession.

Strengthening and renewal of the Academy. The Academy of Management must have continuous infusions of members and new points of view to remain viable and relevant as a professional association. Members may contribute by encouraging all eligible individuals to participate in the Academy and by assisting new and prospective members in developing their skills, knowledge, and understanding of their professional obligations.

The professional environment for many Academy members includes the university community. The central values which underlie appropriate university participation are understanding, involvement, respect, fairness, and the pursuit of knowledge.

Participation in university leadership. Professors should take an active interest in university governance. Professors should be aware of university policies that affect the dissemination of knowledge and be involved in the development of such policies. Professors should endeavor to positively influence policies relating to the quality of education and service to students. Active organizational involvement requires exercise of personal voting rights and respect for such rights of others, without regard to rank or tenure. Professors should evaluate colleagues for purposes of promotion or tenure on the basis of appropriate academic criteria that is fairly weighted in accordance with standards understood by the faculty and the subject of evaluation. It is the duty of Academy members to treat their colleagues with respect and fairness. Members should safeguard confidential personal matters and avoid disclosing opinions expressed, attribution of statements, voting behavior, and outcomes. Members should address misunderstandings and conflicts with those directly involved and avoid speculative criticism that might damage the reputations of individuals or groups. When speaking or acting outside their university roles, professors should avoid creating the impression that they are speaking or acting for their university or its administration. Professors should dispose of complimentary books requested from publishers by a manner other than sale.

All Academy members, whether affiliated with a university, business, governmental, service, or consulting organization have an obligation to interact with others in a professional manner.

Membership in the professional community. It is the duty of Academy members to interact with others in our community in a manner that recognizes individual dignity and merit. The responsible professional promotes and protects the rights of individuals without regard to race, color, religion, national origin, handicap, sex, sexual orientation, age, political beliefs, or academic ideology, and refrains from sexual harassment. In the spirit of intellectual inquiry, the professional should welcome suggestions and complaints openly without reprisal. Members should ensure that outside activities do not significantly diminish their availability and energy to meet their institutional obligations.

MANAGERS AND THE PRACTICE OF MANAGEMENT

Consulting with client organizations ("clients") has the potential for enriching the teaching and practice of management, for translating theory into practice, and for furthering research and community service. To maximize such potential benefits, it is essential that members who consult be guided by the ideals of competence, integrity, and objectivity.

Credentials and capabilities. It is the duty of consultants to represent their credentials and capabilities in an accurate and objective manner. Consultants shall accept only those

assignments for which they have appropriate expertise. Consultants shall refrain from exaggerating their professional qualifications to secure prospective assignments. Consultants shall examine any factors (e.g., prior experience, capabilities, other commitments) that might limit their judgment or objectivity in carrying out an assignment. University endorsement of the consulting activities of Academy members should not be represented or implied to potential clients unless the assignment is formally under university sponsorship or is so approved.

Obligations to clients. Consultants have a duty to fulfill their obligations to their present and prospective clients in a professionally responsible and timely manner. Consultants shall place the highest possible priority on their clients' interests. Consultants shall avoid or withdraw from situations in which their clients' interests come into serious conflict with their own. Consultants shall not serve two or more competing clients without the consent of all parties. Consultants shall fully inform their clients. This means presenting results or advice in an unbiased manner, and discussing fully with the client the values, risks, and limitations of the recommendations.

Client relations. Consultants must fulfill duties of confidentiality and efficiency as part of the relationship with their clients. Consultants shall maintain confidentiality with respect to their clients' identities and the assignments undertaken unless granted permission by the client. Consultants should exercise concern for the protection of clients employees and other stakeholders by maintaining, in particular, appropriate confidentiality. Consultants shall not take personal or financial advantage of confidential information acquired as a result of their professional relationships, nor shall they provide the basis upon which others may take such advantage. Consultants should meet their time commitments and conserve the resources utilized.

Remuneration. It is the duty of consultants to negotiate clear and mutually accepted remuneration agreements for their services. Consultants shall provide a realistic estimate of the fees to be charged in advance of assignments. Fees charged shall be commensurate with the services performed.

Societal responsibilities. Consultants have a duty to uphold the legal and moral obligations of the society in which they function. Consultants should report to the appropriate authorities any unlawful activities that may have been uncovered during the course of engagements except where their functional professional code directs otherwise.

Students and employees. It is the duty of the consultant to safeguard student and employee rights when they are involved in consulting assignments. Consultants may involve students in work generated by engagements, especially if such work possesses learning potential, but students must not be coerced into participation. When they are so involved, students, as well as employees, should be fairly compensated and be made aware of the nature of the work they are doing.

THE WORLD COMMUNITY

As citizens of the world community, Academy members may have much to contribute in shaping global consciousness by their teaching, research, and service.

World view. Academy members have a duty to consider their responsibilities to the world community. In their role as educators, members of the Academy can play a vital role in encouraging a broader horizon for decision making by viewing issues from a multiplicity of perspectives, including the perspectives of those who are least advantaged. As researchers, members of the Academy should consider, where appropriate, increasing their exposure to other cultures via travel, study, and research. Where appropriate, the research might highlight the responsible stewardship of the Earth's resources. In addition, members should take as a challenge the ongoing task of identifying evolving ethical issues by listening to those whose welfare is affected and by exploring the interaction of people and technology. In fulfilling their service responsibilities, members of the Academy should consider how they might lend their time and talent to enhance the world community through involvement in uncompensated public service.

SEXUAL HARASSMENT

The Academy of Management and its members are committed to providing academic environments that are free of sexual harassment and all forms of sexual intimidation and exploitation.

Sexual harassment consists of unwelcome sexual advances, requests for sexual favors, and other visual, verbal, or physical conduct of a sexual nature when:

1. It is implicitly or explicitly suggested that submission to or rejection of the conduct will be a factor in academic employment, admission, evaluation, or participation in an academic activity.
2. The conduct has the purpose or effect of interfering with an individual's academic or work performance, by creating an intimidating, hostile, offensive, or otherwise unacceptable educational or work environment.

The determination of what constitutes sexual harassment depends upon the specific facts and the context in which conduct occurs. Sexual harassment takes many forms: subtle and indirect or blatant and overt; conduct affecting an individual of the opposite or same sex; between peers or between individuals in a hierarchical relationship; between teacher and student. Regardless of the intentions or the actor, the key question is always whether the conduct is unwelcome to the individual to whom it is directed.

There are special risks in any consensual sexual or romantic relationship between individuals in inherently unequal positions (such as student and faculty, or junior and senior faculty). Relationships in which one party is in a position to review the work or influence the career of the other may constitute sexual harassment when that relationship gives undue access or advantage, restricts opportunities, or creates a hostile and unacceptable environment for others in the work or classroom environments. Furthermore, such relationships may be less consensual that the individual whose position confers power believes, because of the complex and subtle effects of that power. Moreover, circumstances may change and conduct that was previously welcome may become unwelcome. Even when both parties have consented at the outset to a romantic involvement, subsequent unwelcome conduct may constitute sexual harassment.

PENNSTATE

Altoona

FACULTY POSITION
BUSINESS/ENTREPRENEURSHIP

Assistant Professor in Business, tenure track, starting August 1998. Penn State Altoona has recently achieved senior college status within The Pennsylvania State University. Nestled in the mountains of south-central Pennsylvania, the 115 acre campus is located in a suburban setting forty-five miles from the University Park Campus. Established in 1939, Penn State Altoona enjoys strong support from the surrounding county with a population of 130,542. Altoona is a two-hour drive from Pittsburgh and three hours from Washington, DC. The approximately 3500 students attending Penn State Altoona can choose to start the first two years of 180 baccalaureate majors or complete six associate degrees or four baccalaureate degree majors. Its baccalaureate degree offerings will expand over time.

Responsibilities of the position are teaching, research/scholarship, and service. Candidates must have a Doctorate in Business, Business Administration or related field. Candidates must have demonstrated ability to develop and pursue a program of scholarly research. Applicants should be prepared to teach courses in entrepreneurship and other business-related subjects leading to BS degree in Business with an emphasis in entrepreneurship. An orientation toward technological entrepreneurship, perhaps characterized by an undergraduate degree in science, engineering, technology or a related field is desirable, as is an interest in international business. Salary is competitive, commensurate with background experience. An attractive benefits package is available. Applicants should submit: a formal letter of application establishing their qualifications; a current curriculum vitae; a description of teaching experience and statement of research interest; placement service credentials, if available; and a minimum of three letters of recommendation. All inquiries and applications should be sent to: **Chair, Search Committee for Business/ Entrepreneurship, Penn State Altoona, 3000 Ivyside Park, Altoona, PA 16601-3760. Review of applications will begin the week of January 12, 1998, and continue until a suitable candidate is found.** An Affirmative Action/ Equal Opportunity Employer. Women and Minorities Encouraged To Apply.

CRANFIELD SCHOOL OF MANAGEMENT
TEACHING AND RESEARCH OPPORTUNITIES

Cranfield School of Management is one of Europe's leading post-graduate business schools and has an excellent teaching rating and a very high quality research output. This excellent reputation has enabled the School to become one of the largest providers of management education for senior executives. This success in presenting public short courses, organising in-company events and in securing funded research leads led the School to search for highly talented individuals who can become involved with these activities.

These opportunities focus upon developing management research or dissemination via presentations and facilitation, depending upon the inclination of the applicant. However, the common themes are highest quality, total customer commitment and practical applicability. Candidates must be able to demonstrate that they can add to the present excellent reputation via their experience and formal qualifications.

Attractive reward packages will be offered. Candidates should forward full details of their experience and qualifications in the first instance to the Personnel Department, Cranfield School of Management, Cranfield, Bedford MK43 0AL, England.

University of Canterbury
New Zealand

Lecturer in Management
(Management Science/Operations Research)

Applications are invited for the position of Lecturer (equivalent to Assistant Professor) in the Department of Management, in the subject area of Management Science/Operations Research. The minimum qualification on appointment is the Ph.D. degree or equivalent, and all academic positions are normally offered with tenure. Candidates in any area of Management Science will be considered, with strong preference given to those with expertise in mathematical programming including a good understanding of current trends in modelling and solution using modern computer software. Practical experience is an advantage. The successful candidate will have a strong interest in both teaching and research. An existing publication record as evidence of research potential is expected. By international standards the position comes with excellent research support, study leave conditions and teaching loads.

The appointee will teach at undergraduate level and at graduate level in their area of expertise, and will be involved in graduate supervision. The teaching load is approximately 100 lecture hours per year scheduled to allow for a significant period of uninterrupted research.

The Department of Management teaches and researches in the areas of marketing, management science, human resource management and organizational behaviour, production management, and strategic management. Over the last 6 years student numbers in the Department have increased by 50%. It now has 21 academic staff and over 100 graduate students including 16 Ph.D.s. There is a strong emphasis in the Department on excellence in teaching and research. This is supported by a world-class library, excellent computing facilities, and attractive leave conditions. Financial support is available for research, visiting overseas universities and contributing to overseas conferences. Interested applicants are encouraged to visit our web page at: **<http://www.mang.canterbury.ac.nz>.**

Academic enquiries only may be made to the Head of Department, Associate Professor J A George, Fax 64-3-364-2020 or **Email: <j.george@mang.canterbury.ac.nz>.**

The salary for Lecturers is on a scale from NZ$45,000 to NZ$55,000 per annum.

Conditions of Appointment and Information for Candidates will be airmailed on request to: **<acad.appts@regy.canterbury.ac.nz>.**

Applications, quoting Position No. MG65, close on 15 January 1998, and must be addressed to:

The Registrar, Attention Staffing Section, University of Canterbury, Private Bag 4800, Christchurch, New Zealand.

The University has a policy of equality of opportunity in employment.

BABSON

Faculty Openings
Strategic Management
Babson College
Babson Park (Wellesley)
Massachusetts

The Management Division at Babson College has tenure track faculty openings at the assistant professor level in the strategy group. The college is seeking to recruit people who have recently completed or are about to complete their doctoral degrees. Teaching responsibilities would include being involved in both the undergraduate and graduate level core courses and advanced electives.

Applicants should be capable of teaching and conducting research from a multi-disciplinary and practitioner-oriented perspective. Ideally, they would have a research specialty at the intersection of strategy and one of the following areas: technology and innovation management, corporate finance, or international business. An applied research focus and several years of non-academic professional experience would be very helpful. Prior teaching experience is also highly valued.

Founded in 1919, Babson College offers bachelor's and master's degree programs in business management accredited by the AACSB. In recent years, Babson has won national and international acclaim for its curriculum innovations and leadership position in the area of entrepreneurship. There are approximately 1600 undergraduates, 1600 MBA candidates (full-time and evening part-time), and a growing number of people who come to Babson for executive and advanced professional courses. The college is located 14 miles west of Boston on a 450 acre wooded campus in Wellesley, Massachusetts.

Candidates should send resumes to:

Professor U. Srinivasa Rangan
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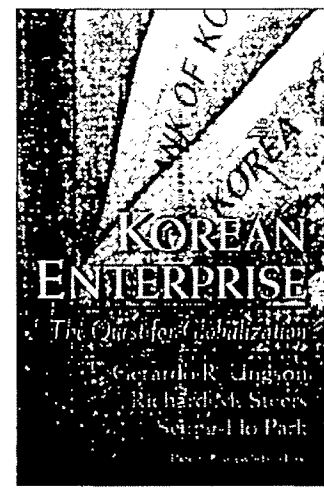

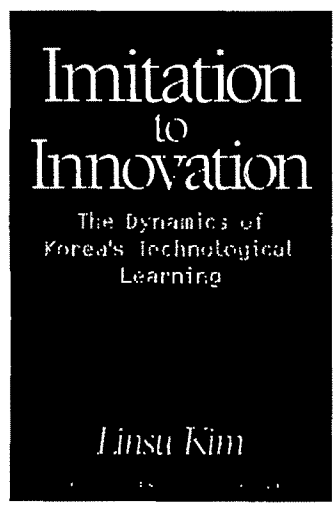

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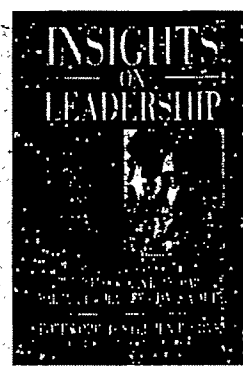

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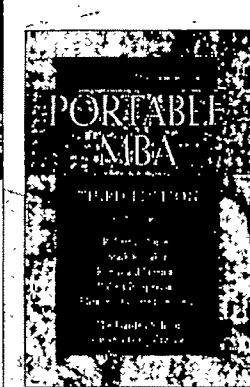

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